Publication number SM 3211/3212

KODAK

MINILOADER Model 1

SERVICE MANUAL
SM 321113212

KODAK LIMITED
September 1990

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PREVENTATIVE MAINTENANCE PROCEDURE FOR MINILOADER 1

REMINDER- Remember that all labour for fitting parts and carrying out repairs etc. is NOT part of the PREVENTATIVE MAINTENANCE visit and must be fed back as separate tasks, irrespective of the Contract held by the customer.

1) Discuss recent performance of the MINILOADER with the customer, check recently processed FILMS for artifacts and examine recent entries in the equipment LOG BOOK. Check modification status.

2) Withdraw the MAGAZINE/S. Remove the TOP COVER and both SIDE PANELS from the MINILOADER. Fit a new AIR FILTER element. Using a BRUSH and a VACUUM CLEANER, remove all dust and debris from inside the MINILOADER. Polish the TUNNEL on PROCESSOR INTERFACE versions.

3) Check the condition of all HOSES and SUCKERS and replace if damaged. Check the VACUUM to the SUCKERS (150 - 200 millibars). Check the COMPRESSOR reaches a minimum pressure of 2.5 bar. Take necessary action to correct.

4) Check CHAIN tensions, and adjust and lubricate as necessary.

5) Check condition and tension of CONVEYOR BELT and clean or adjust if necessary.

6) Check PHOTOCELL REFLECTORS for security and cleanliness.

7) Check CASSETTE REFLECTOR patches and replace if necessary.

8) Lubricate the TILT PIVOTS every visit. Annually lubricate PUSH ROD ends and other moving parts.

9) Check general security of PUSH RODS and MOTORS etc. Check the PRINTED CIRCUIT BOARDS are correctly installed.

10) Load the SUPPLY MAGAZINE with TEST FILM and run some test cycles paying particular attention to FILM SEPARATION, TILT action, correct positioning of new FILM in the CASSETTE, CASSETTE INJECTOR action and correct release of FILM into RECEIVING MAGAZINE on STAND ALONE versions. Check MAGAZINE NEARLY EMPTY signal and MAGAZINE EMPTY signal. Adjust as necessary.

11) Note reading on cycle COUNTER. Remove TEST FILM, replace all COVERS and if possible process some film to check for artifacts. Fill in the equipment LOG BOOK.

TECHNICAL FEEDBACK **SPECIAL PURPOSE CODES.**
KODAK **MINILOADER 1** STAND ALONE SERVICE CODE **3211**
KODAK MINILOADER **1** PROCESSOR INTERFACE SERVICE CODE 3212

Z01	CASSETTE did not open	**Z21**	Scratches on FILM
Z02	FILM not removed from CASSETTE	**Z22**	Static marks on FILM
Z03	FILM jammed in TUNNEL / RECEIVING MAGAZINE	**Z23**	Lines on FILM
		Z25	Light leak marks on FILM
Z05	CASSETTE failed to eject	**Z26**	Pressure marks on FILM
Z12	Multiple FILM bad	**Z27**	MAGAZINE repair
Z13	New FILM not picked up	**Z28**	CASSETTE preparation and repair
Z14	MAGAZINE blocked by FILM	**Z29**	FILM not entering CASSETTE correctly
Z17	CAM SYSTEM malfunction	**Z30**	Unable to power up.
Z18	Loss of pressure / vacuum	**Z31**	Unable to enter CASSETTE
Z19	Cycle time incorrect	**Z32**	SERIAL MODE malfunctions

TECHNICAL FEEDBACK REMEDY CODES.
KODAK MINILOADER 1 STAND ALONE SERVICE **CODE 3211**
KODAK MINILOADER 1 PROCESSOR INTERFACE SERVICE CODE 3212

1	Adjust / **Align** / Setup
2	Clean
3	Instruct Operator / Customer
4	Lubricate
5	Reinstall / Repair
6	Replace / Send out for repair
7	Reset / Reprogram
6	Rewire / Resolder / Rebond / Crimp
9	No remedy required / Product problem
A	Unable to duplicate problem
R	Reseat / retighten
S	Recommend site improvements

TECHNICAL FEEDBACK SUBSYSTEM CODES.
KODAK MINILOADER 1 STAND ALONE SERVICE CODE 3211
KODAK MINILOADER 1 PROCESSOR INTERFACE SERVICE CODE 3212

MICROSWITCHES

MS1	CAM home	MS10	INTERLOCK
MS2	CAM position	MS11	INTERLOCK
MS3	CAM position	MS12	INTERLOCK
MS4	CAM position	MS13	TILT
MS5	CAM position	MS14	TILT
MS6	CAM position	MS15	TILT
MS7	CAM position	MS16	CAM position
MS8	CAM position	MS17	CAM position
MS9	INTERLOCK		

SWITCHES

CB1	Main CIRCUIT BREAKER
S16	JOG SWITCH
s17	UNLOAD only
S18	SERIAL MODE start
S19	SERIAL MODE interupt
S20	Reset CAMS
S21	CASSETTE eject
S22	Cycle time
S23	TIMER T9 inhibit
S24	KN SWITCH (INTERLOCK inhibit)
s25	Top COVER INTERLOCK
S26	Front DOOR NTERLOCK
S27	Rear DOOR INTERLOCK

MOTORS.

MI	COMPRESSOR MOTOR
M2	CASSETTE vacuum PUMP
M3	MAGAZINE vacuum PUMP
M4	FAN MOTOR
M5	TILT MOTOR
M6	CASSETTE CONVEYOR MOTOR

TECHNICAL FEEDBACK **SUBSYSTEM** CODES.
KODAK MINILOADER 1 STAND ALONE SERVICE CODE 3211
KODAK MINILOADER 1 PROCESSOR INTERFACE SERVICE CODE 3212

PHOTOCELLS

FC1	CASSETTE at endstop / FILM in CASSETTE
FC2	CASSETTE entered
FC3	CASSETTE opened
FC4	FILM stuck on screen
FC5	MAGAZINE nearly empty
FC6	MAGAZINE empty
FC7	FILM jammed in tunnel / MAGAZINE full
FC8	Multiple FILM load

SOLENOID VALVES

SV1	CASSETTE INJECTOR
sv2	MAGAZINE INJECTOR
sv3	CASSETTE (unload) vacuum
sv4	MAGAZINE (bad) vacuum
sv5	COMPRESSOR

FUSES.

F1	COMPRESSOR
F2	CASSETTE vacuum
F3	MAGAZINE vacuum
F4	FAN
F5	TILT MOTOR
F6	CUNVNOR MOTOR
F7	CAM MOTOR
F8	TRANSFORMER primary
F9	TRANSFORMER secondary stabilised
F10	DC 12 VOLT stabilised
F11	DC 12 VOLT MOTORS

TECHNICAL FEEDBACK SUBSYSTEM CODES.

KODAK **MINILOADER** 1 STAND ALONE SERVICE CODE 3211
KODAK **MINILOADER** 1 PROCESSOR INTERFACE SERVICE CODE 3212

	PRINTED CIRCUIT BOARDS
A I	PCB 101 **/101A**
A2	PCB 102 / 102A
A3	**PCB 103 / 103A / 103B**
A4	**PCB 104 / 104A**
A5	PCB 105 **/ 105A / 105B**
A6	PCB **106 / 106A / 106B**
A7	PCB 107 **/ 107A**
A8	**PCB 108 / 108A**

	MECHANICAL
221	FRAME
222	MAGAZINE CARRIER
223	MAGAZINE **opening mechanism**
225	**CASSETTE transport**
226	**CASSETTE CENTERING**
227	**CASSETTE OPENER mechanism**
228	**CASSETTE unload mechanism**
22A	**TUNNEL**
22B	**DOORS**
22c	**COMPRESSOR SYSTEM**
22D	**VACUUM SYSTEM**
22F	**CASSETTE**
22G	**FILM SEPERATION**
22H	**PUSHROD**

TECHNICAL FEEDBACK COMPONENT CODES.

KODAK MINILOADER 1 STAND ALONE SERVICE CODE 3211
KODAK MINILOADER 1 PROCESSOR INTERFACE SERVICE CODE 3212

ELECTRICAL

57	BUZZER
48	CABLE
50	CAPACITOR
319	CIRCUIT BOARD
55	CIRCUIT BREAKER
46	CONNECTOR
29	COUNTER
75	DIODE
43	FAN
55	FUSE
77	INTEGRATED CIRCUIT
43	MOTOR
46	PHOTOCELL
59	POTENTIOMETER
U	POWER SUPPLY
75	RECTIFIER
U	REGULATOR
45	RELAY
59	RESISTOR
45	SOLENOID
47	SWITCH
56	TRANSFORMER
49	WIRE
79	OTHER ELECTRICAL

MECHANICAL / PNEUMATIC.

24	AR REGULATOR
59	ARM
5	BEARING
12	BELT
21	BRACKET
20	CAM / CAM FOLLOWER
32	CASSETTE
91	CATCH / LATCH
12	CHAIN
31	CLAMP
11	CLUTCH
6	COLLAR / COUPLER
39	CONNECTING ROD
33	COVER/PANEL/ DOOR
31	FASTENER
25	FILTER
21	FRAME
66	GASKET / SEAL
67	GAUGE
20	GEAR / SPROCKET / PULLEY
16	GUIDE
66	LIGHT LOCK
7	PNEUMATC FITTING
15	REFLECTOR / MIRROR
19	ROLLER
28	SHAFT
94	SPACER
26	SPRING
36	SUCKER
37	OTHER MECHANICAL / PNEUMATIC

ADJUSTMENTS

ADJUSTING UNLOAD (CASSETTE PICK-UP) SUCKERS.

SERIAL NUMBERS BELOW 1162

These MINILOADERS are fitted with solid unload SUCKERS (part number 30012181). There should also be a SPACER (part number 30012238) fitted above the SUCKER at the free end of the SUCKER BAR, figure **1A.** The later collapsible SUCKERS should not be fitted unless the spigots on the SUCKER BAR are shortened. Also, without the STOP SCREW no advantage is gained from the collapsible SUCKERS.

1 To begin the adjustment, position the PUSH ROD END in the centre of the slot in the CAM FOLLOWER, (figure 1 C).

2 Using the JOG SWITCH (S16 on PCB **106/A/B)** jog the CAM MOTOR until the CASSETTE SUCKERS are at their lowest point. Adjust the angle of the SUCKER BAR by loosening the two GRUB SCREWS and set the SUCKERS parallel to the BELT. After the PUSH ROD length (Figure C) so the SUCKERS just touch the BELT.

3 Using TEST FILM enter a loaded **CASSETTE.** Observe the release point of the unloaded FILM. On PROCESSOR INTERFACE versions this is not **critical,** but on STAND ALONE versions the leading edge of the FILM should just touch the rear edge of the RECEIVING MAGAZINE. If the FILM lands short or stubs on the MAGAZINE alter the position of the PUSH ROD END in the SLOT in the CAM FOLLOWER.

4 Repeat steps 2 and 3 until the settings are correct.

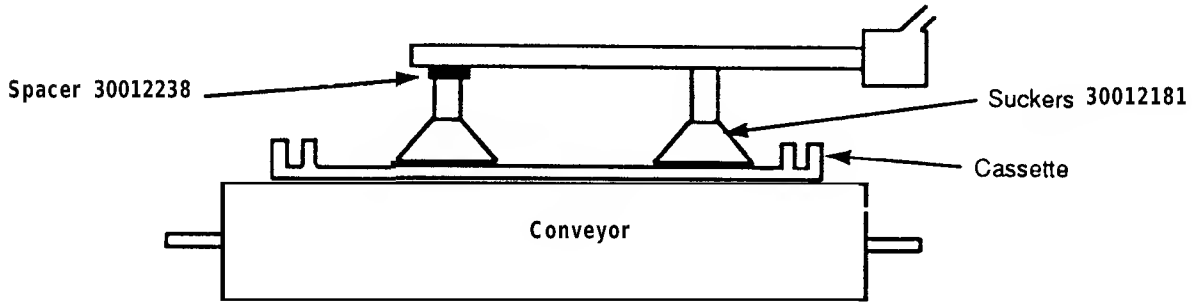


Figure 1 A

ADJUSTING UNLOAD **(CASSETTE** PICK-UP) SUCKERS.

SERIAL NUMBERS ABOVE 1162

These MINILOADERS are fitted with collapsible unload SUCKERS (part no.30012299). There should also be a SPACER (part number 30012238) fitted above the SUCKER at the free end of the SUCKER BAR, figure **1B**.

1 To commence the adjustment, position the PUSH ROD END in the centre of the slot in the CAM FOLLOWER, (figure 1 C).

2 Using the JOG SWITCH **(S16** on PCB **106/A/B)** jog the CAM MOTOR until the CASSETTE SUCKERS are at their **lowest** point. Screw in the STOP SCREW (see figure 1 B) so it is clear of its REST. Adjust the angle of the SUCKER BAR by loosening the two GRUB SCREWS and set the SUCKERS parallel to the BELT Alter the PUSH ROD length so the SUCKERS just touch the BELT.

3 Fii the STEP BY STEP SWITCH (see page SM 70). Using TEST FILM enter a loaded CASSETTE. Observe the release point of the unloaded FILM. On PROCESSOR INTERFACE versions this is not critical, but on STAND ALONE versions the leading edge of the FILM should just touch the rear edge of the RECEIVING MAGAZINE. **If** the FILM lands short or stubs on the MAGAZINE alter the position of the PUSH ROD END in the SLOT in the CAM FOLLOWER.

4) Repeat steps 2 and 3 until the settings are correct.

5) Enter a loaded CASSETTE and stop the MINILOADER when the SUCKERS are at their **lowest** point. Adjust the STOP SCREW so the SUCKERS press on the FILM and collapse by 1 mm.

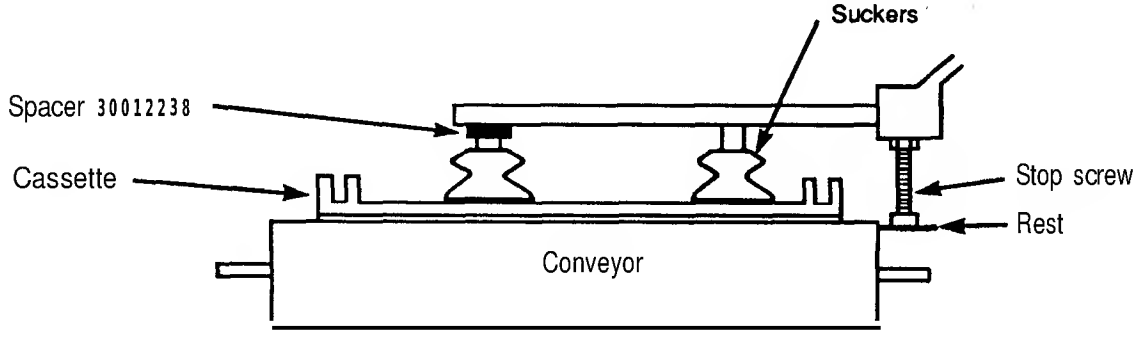


Figure 1 B

ADJUSTING UNLOAD (CASSETTE PICK-UP) SUCKERS.

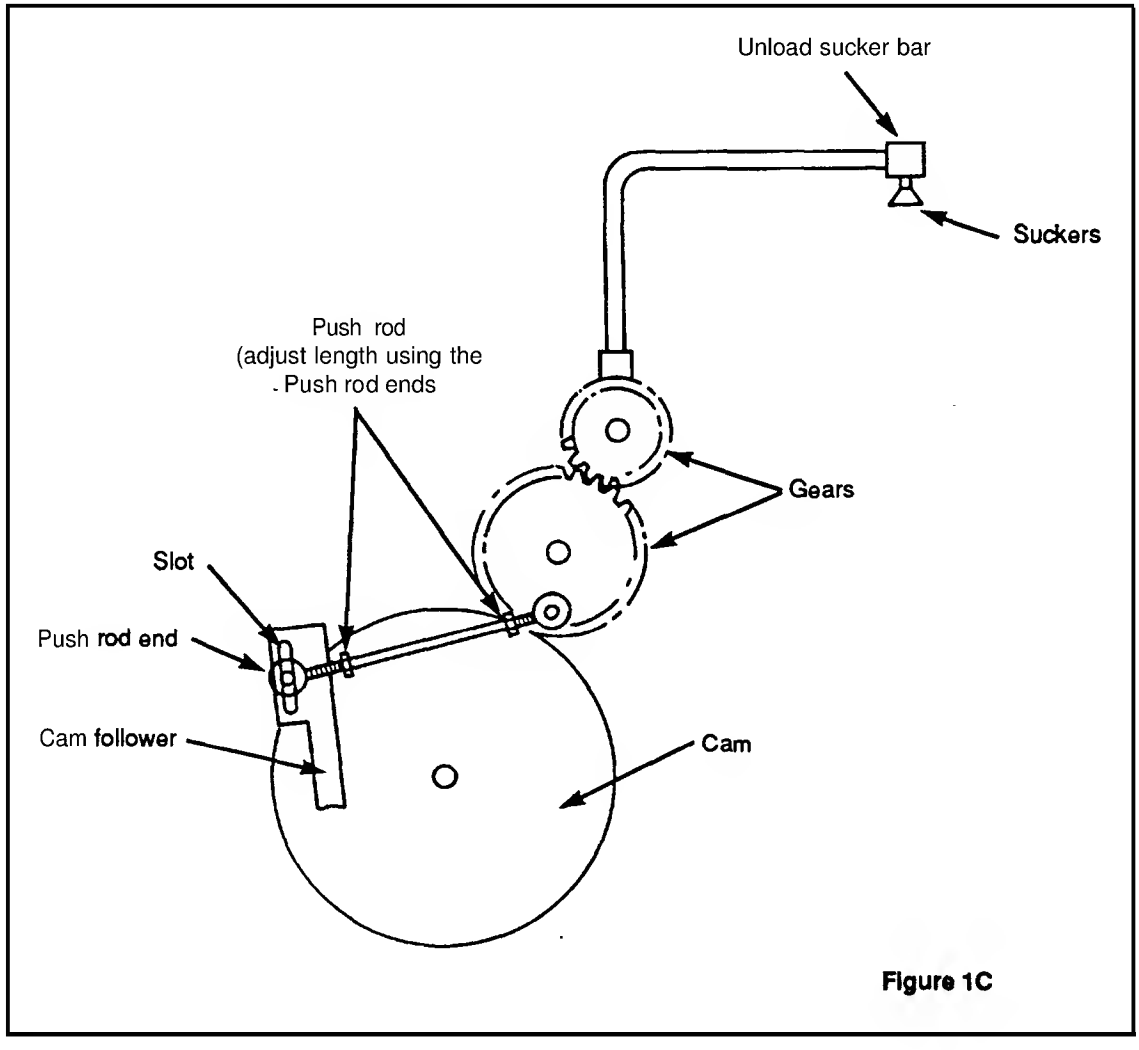


Figure 1C

ADJUSTMENT OF VACUUM

1 Remove the vacuum pipes in turn where they are connected to the magazine and cassette sucker bars. Use the vacuum test pipe assembly (Part number 30015657) to connect the vacuum gauge (Part number 29010170) and adaptor (Part number 29010166) into the vacuum line. Use the step-by-step switch (Part number 29035052) [after opening S23 on PCB **13]**, to stop the cycle at the appropriate place.

2. Adjust the vacuum to between 150 and 200 millibars by means of the appropriate bleed screw (mounted by SV3 and SV4).

ADJUSTING THE CASSETTE OPENER MECHANISM

The CASSETTE OPENER MECHANISM is operated by two CAMS and two PUSH RODS. The PUSH ROD part no. 30012190 (Parts list page 24) operates the CASSETTE OPENER CARRIER, and the PUSH ROD part no. 30012191 operates the ROD PUSHER CONTROL ARM (Parts list page 26).

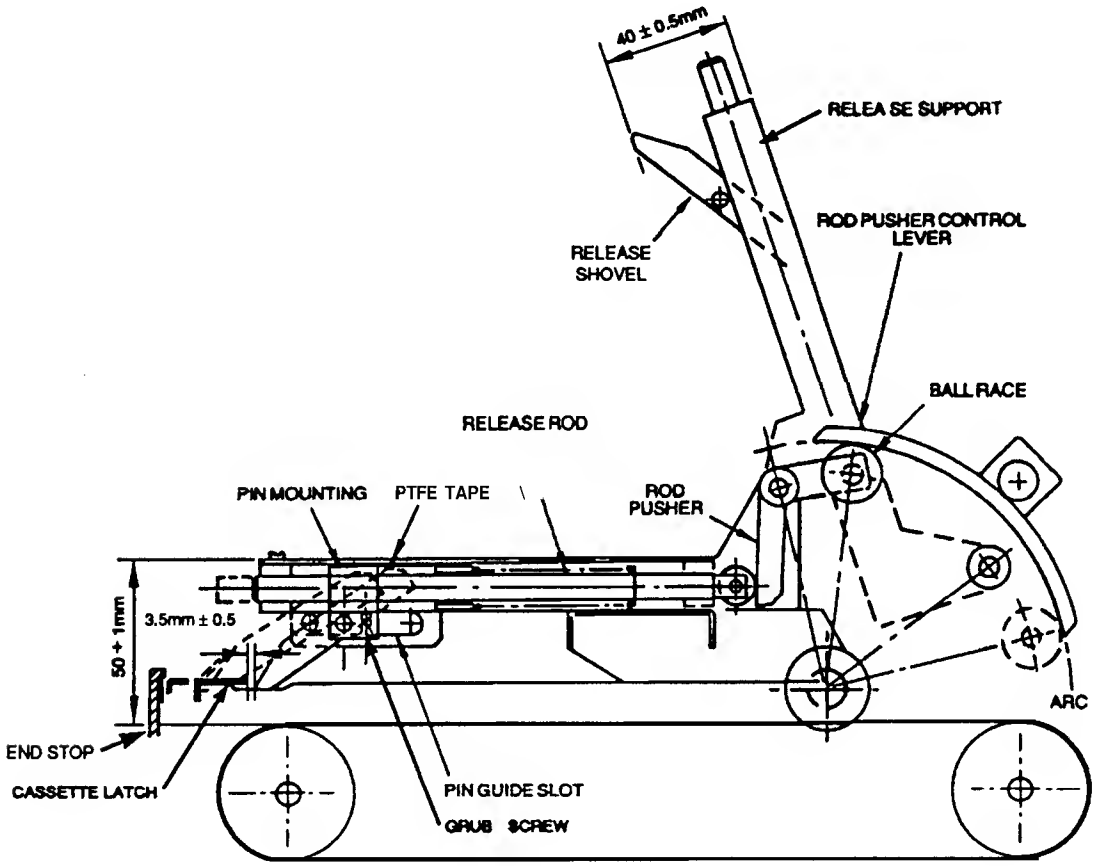


Figure **2**

ADJUSTING THE CASSETTE OPENER MECHANISM (continued)

If the PUSH RODS have been disconnected extreme care must be taken during this adjustment, as it is possible to cause a mechanical jam between the ROD PUSHER CONTROL LEVER and the RELEASE SUPPORT when attempting to cycle the MINILOADER and physical damage can result.

Before starting the adjustments, make sure the SHOVEL RETURN SPRING (Parts list page 25) is operating correctly.

1 Using the JOG SWITCH (S 16 on PCB 106/A/B), cycle the CASSETTE OPENER MECHANISM until the RELEASE SUPPORT is at its lowest point relative to the CONVEYOR BELT. Set this height to be 50 mm +/- 1 mm (see fig 2 - page SM 11) by adjusting the PUSH ROD 30012190.

2 Run the MINILOADER through several cycles using the JOG SWITCH, and adjust the PUSH ROD 30012191 which controls the ROD PUSHER CONTROL LEVER until, except for the initial CASSETTE opening movement of the SHOVEL and the RELEASE ROD, a true arc is followed by the ROD PUSHER BALL RAC _ and no further forward or backward movement is detected in the RELEASE ROD and SHOVEL during a cycle. This adjustment is critical to prevent damage to CASSETTE LATCHES.

3 Place a CASSETTE in the MINILOADER and push it hard against the ENDSTOP. Using the JOG SWITCH cycle the MINILOADER to the point where the RELEASE ROD and SHOVEL are just about to move forward. Measure the gap between the CASSETTE LATCH and the RELEASE SHOVEL (see fig 2 - Page SM 11). The gap should be 3.5 mm ± 0.5 mm. If it is necessary to alter the gap, cycle the MINILOADER until the CASSETTE OPENER MECHANISM is raised, unhook the CASSETTE if it has been opened, and release the GRUB SCREW to slide the TOOTH ASSEMBLY on the RELEASE ROD (make sure you release the correct GRUB SCREW, it is the recessed one, the other SCREW controls the RETURN SPRING tension). Cycle the MINILOADER and re-measure the gap. Repeat until the correct gap is obtained.

4 Check you have tightened all NUTS on the PUSH RODS correctly.

SUPPLY MAGAZINE SEPARATION AND PICK UP ADJUSTMENT

ADJUSTMENT OF MAGAZINE INJECTOR

NOTE: The magazine injector bar must be kept parallel to the magazine edge.

1 Place one FILM in the SUPPLY MAGAZINE and push it to the back edge.

2 Using the JOG switch, jog the machine until the RUBBER STOP (Number 1 in figure 3) on the INJECTOR BAR is resting on the FILM (FIG.3).

3 Slacken the two socket headed SCREWS (Number 1 in Figure 5) on the underside of the INJECTOR BAR CLAMPING COLLAR and position the BAR so that the RUBBER STOP overlaps the front edge of the FILM by 1.5 to 2 mm (fig 3). Ensure that the INJECTOR BAR remains parallel to the MAGAZINE in both planes. Tighten the CLAMPING SCREWS.

4 Put 100 FILMS in the MAGAZINE and adjust the angle of the INJECTOR to give 4 to 5mm gap . Check that the slot in the INJECTOR is facing the FILMS.

5 Using a 0.15mm FEELER GAUGE on the top of the FILM stack (see fig.5), adjust the height of the INJECTOR BAR by means of the threaded rod (number 2 in fig. 3) so that the slot is level with the top of the FILM stack.

6 Test the Miniloader with a full, half full and nearly empty magazine to check for good FILM separation. If necessary, adjust the height of the bar and test again.

SUPPLY MAGAZINE SEPARATION ADJUSTMENT

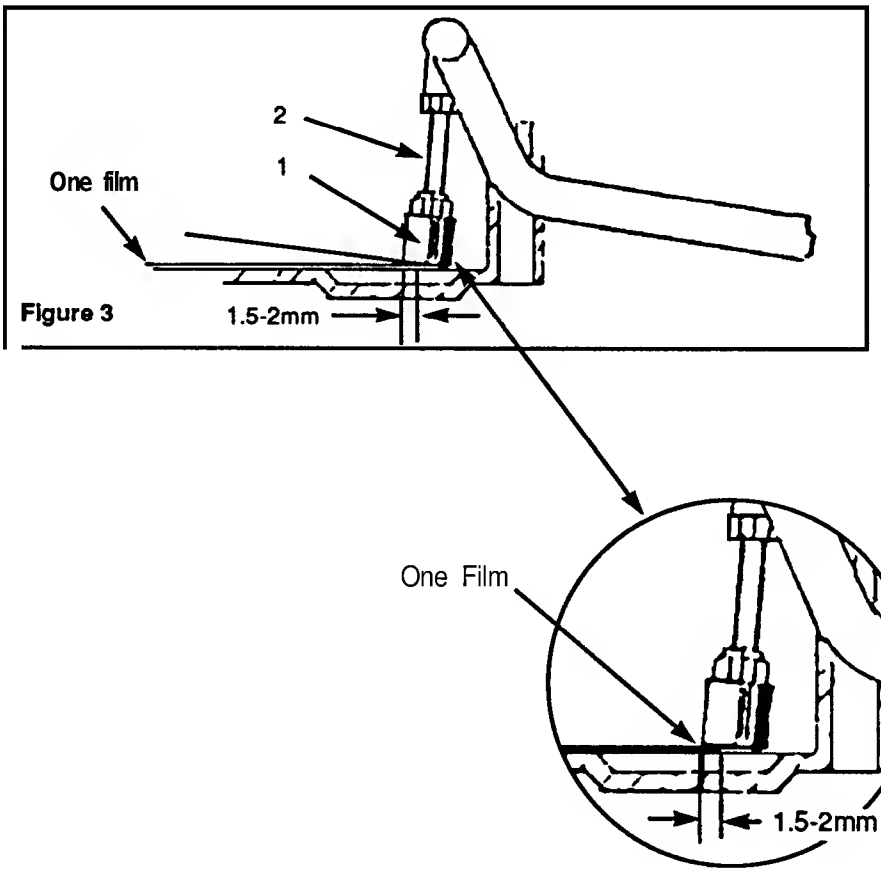


Figure 3

SUPPLY MAGAZINE SEPARATION ADJUSTMENT

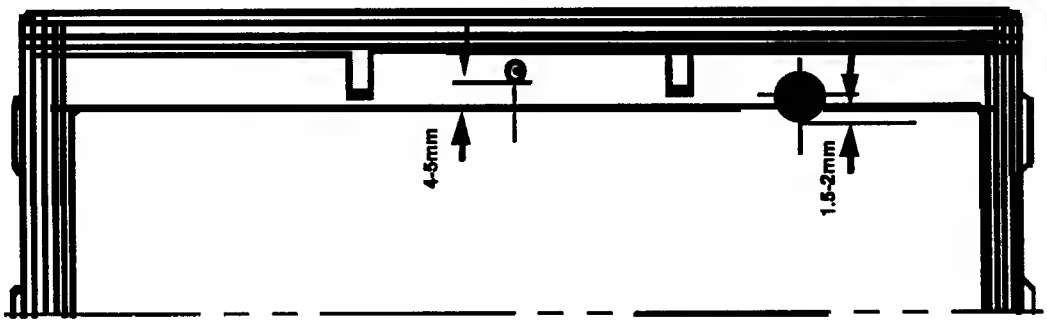


Figure 4

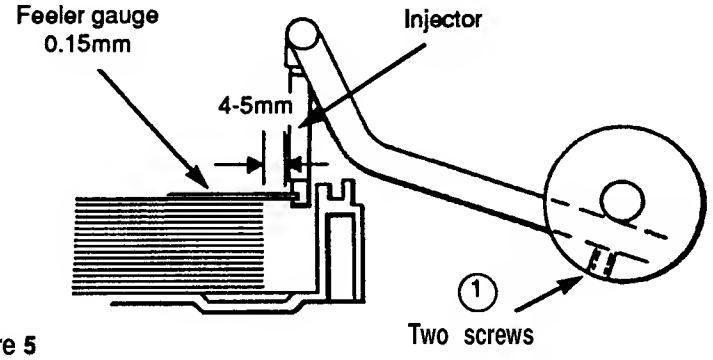


Figure 5

ADJUSTMENT OF THE SEPARATION RATCHET
Machines above Serial Number 1162

1 Turn off the power to the MACHINE.
2 Adjust the SUCKERS so that they are parallel with the FILM face.
3 Turn the CAM on the tilt motor by hand until the SUCKERS are 5 to 8mm above the top of the FILM stack. The LIFTING TOOTH (3 on **Figure** 9, page SM18) should engage in the RATCHET at approximately the eighth or ninth tooth down from the top. Adjust the STOP up or down if necessary to achieve this.

ADJUSTMENT OF MAGAZINE (LOAD) SUCKER BAR.

WITHOUT LIFT BEFORE TILT

The MAGAZINE SUCKER BAR is driven by a CAM and two PUSH RODS via a LEVER through GEARS and a COMPENSATING ASSEMBLY which allows for the varying height of the FILM stack in the MAGAZINE. The SUCKERS fitted to the BAR should be as in fig 8 (page SM **17),** with a SPACER (part no. 30012238) fitted as shown.

1 Fit the STEP BY STEP SWITCH to the MINILOADER (see PCB 106 page **SM54).** Place some TEST FILM in the SUPPLY MAGAZINE. Check that the TILT is off.
2 Enter a CASSETTE and stop the MINILOADER when the SUCKERS just touch the surface of the FILM. Loosen the two GRUB SCREWS which clamp the SUCKER BAR and set the BAR so there is a 2 mm gap between the rear edge of the SUCKERS and the FILM when the front edge of the SUCKERS just touches the FILM, adjusting the individual SUCKERS **if** necessary. This adjustment is critical to get correct entry of the FILM into the CASSETTE.
3 Slacken off the STOP (3 in **fig** *7 page* SM 17). Run some cycles and adjust the CAM (2 in fig 7) to obtain correct entry of the FILM into the CASSETTE. If necessary also adjust the length of either of the PUSH RODS. The FILM should be "tucked into" the HINGE of the CASSETTE without catching the BASE of the CASSETTE or the SCREEN. The FILM should not stub against the HINGE and the SUCKER BAR must not catch the SCREEN. When the FILM is being entered correctly into the CASSETTE, set the STOP so the SUCKER BAR presses against it with a force of 0.5 to 1 kg.
4 When all adjustments are complete, check the tightness of all NUTS and SCREWS. Remove the STEP BY STEP SWITCH.

***WITH LIFT** BEFORE TILT*

The MAGAZINE SUCKER BAR is driven by a CAM and two PUSH RODS via a LEVER through GEARS and a COMPENSATING ASSEMBLY which allows for the varying **height** of the FILM stack in the MAGAZINE. The SUCKERS fitted to the BAR should be as in fig 8 (page **SM18),** with a SPACER (part no. 30012238) fitted as shown.

1 Fit the STEP BY STEP SWITCH to the MINILOADER (see PCB 106A page SM70). Place some TEST FILM in the SUPPLY MAGAZINE. Check that the TILT is off.
2 Enter a CASSETTE and stop the MINILOADER when the SUCKERS are about 2 mm from the surface of the FILM. Loosen the two GRUB SCREWS which clamp the SUCKER BAR and set the BAR so the SUCKERS are parallel to the FILM, adjusting the individual SUCKERS if necessary.
3 Slacken off the STOP (4 in **fig** 9 page SM 18). Run some cycles and adjust the CAM (2 in fig 9) to obtain correct entry of the FILM into the CASSETTE. If necessary also adjust the length of either of the PUSH RODS. The FILM should be "tucked into" the HINGE of the CASSETTE without catching the BASE of the CASSETTE or the SCREEN. The FILM should not stub against the HINGE and the SUCKER BAR must not catch the SCREEN. When the FILM is being entered correctly into the CASSETTE, set the STOP so the SUCKER BAR presses against it with a force of 0.5 to 1 kg.
4 When all adjustments are complete, check the tightness of all NUTS and SCREWS. Remove the STEP BY STEP SWITCH.

SUPPLY MAGAZINE SUCKER ADJUSTMENT - MACHINES *WITHOUT* LIFT BEFORE TILT

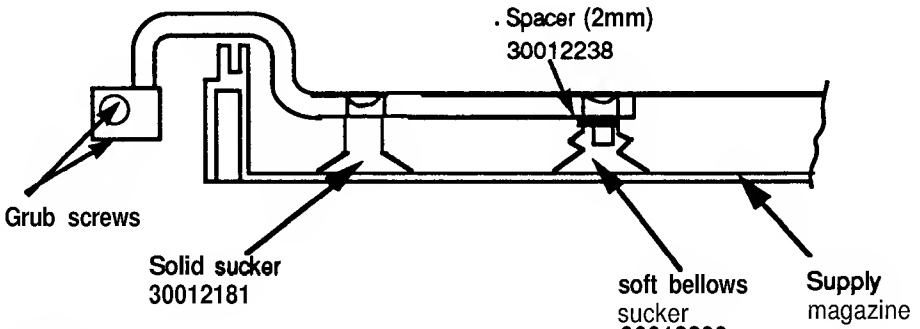


Figure 6

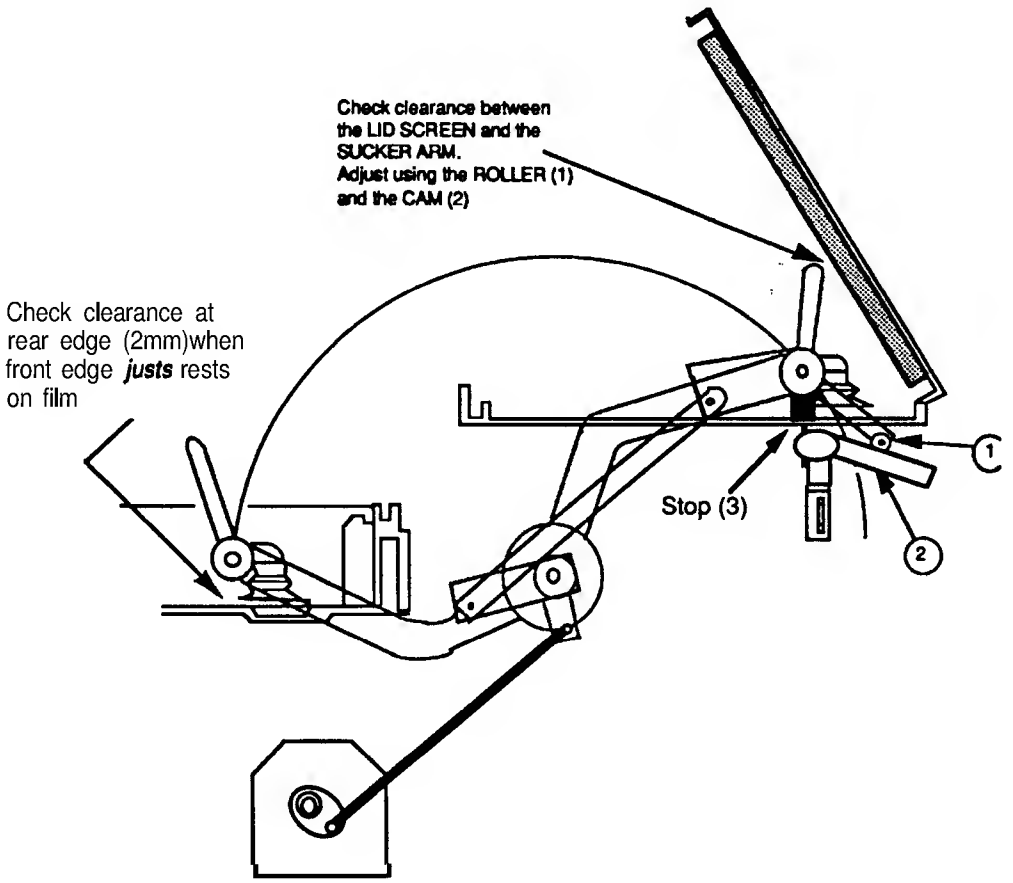


Figure 7

SUPPLY MAGAZINE SUCKER ADJUSTMENT - MACHINES *WITH* LIFT BEFORE TILT

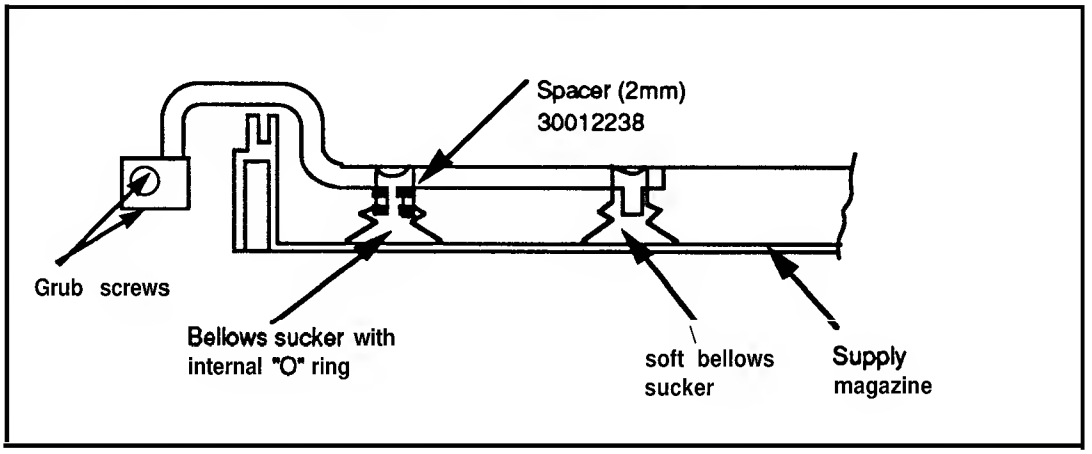


Figure 8

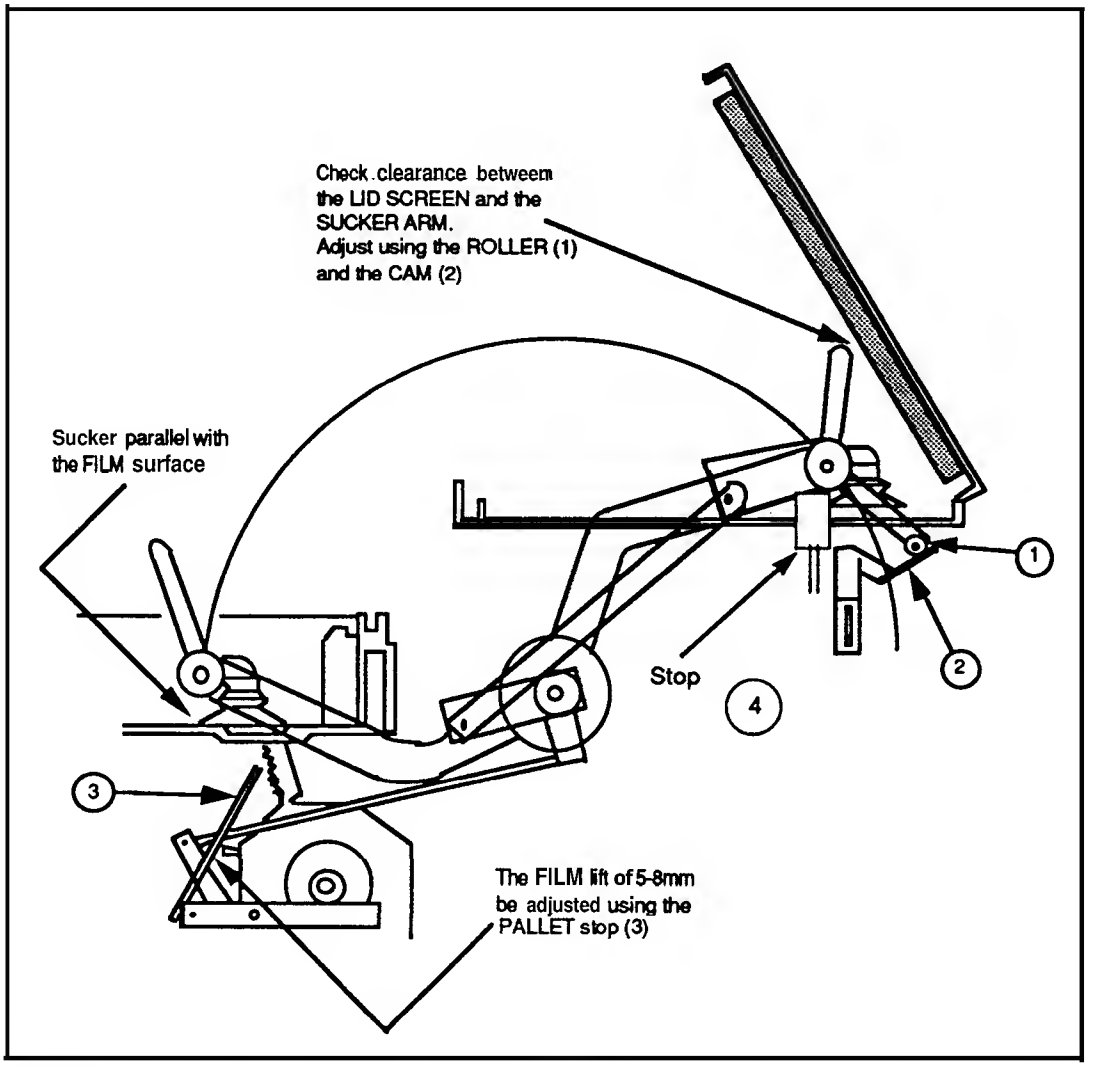


Figure 9

ADJUSTMENT OF PHOTOCELLS AND PHOTOCELL AMPLIFIERS

FOR SERIAL NUMBERS BELOW 7762 TOOL **M** 207 (part **no.**[illegible]) is required for these adjustments. The PRINTED CIRCUIT BOARD EXTENDER CABLE (part no. 29647990) is also required.
FOR ***SERIAL NUMBERS 1762 AND UP*** **TOOL M** 223 (part **no.**[illegible]) is required for these adjustments.

Note that FC 2 is the only PHOTOCELL that is active when the MINILOADER is not cycling. Therefore FC 2 must always be **triggered** before any other PHOTOCELL can be checked. Remember you can only trigger the MINILOADER with FC 2 when the CAM is in HOME POSITION.

Before starting adjustments, remove the TOP COVER, SIDE PANELS and FRONT PANEL.
The current readings quoted for the PHOTOCELLS FC 1 to FC 7 inclusive, are obtained by removing the appropriate INTEGRATED CIRCUIT and connecting a DIGITAL MULTIMETER set on 20 **mA** dc range between pins 3 and 4 of the IC SOCKET.
A convenient way of doing this is to obtain an IC SOCKET **and** solder two leads to pins 3 **&** 4. These leads can now be connected to the DIGITAL MULTIMETER.
Table 1 shows location of **IC's,** POTENTIOMETERS, minimum current, and the number of turns to turn the POTENTIOMETER after the LED **lights.**
If the minimum current cannot be obtained, check that the REFLECTOR is not dirty or damaged, and clean or change it if necessary (the REFLECTORS made of the reflective glass bead tape cannot be cleaned, they must be changed. If necessary several CASSETTE PATCHES can be used to form a new REFLECTOR). A mirror type REFLECTOR can only be replaced by another mirror.
If the minimum current still cannot be obtained, change the PHOTOCELL. If the limit (indicated by clicks) on the POTENTIOMETER is reached before the required number of turns on are obtained, do a full set up of the PHOTOCELL, check the current and if necessary change the PHOTOCELL.
You can always test the INTEGRATED CIRCUIT by temporary substitution with an IC from another amplifier circuit.
On serial numbers 1162 and up the PHOTOCELL LED's are all on PCB **108A,** bur on earlier MINILOADERS the LED's are next to the RELAYS for the PHOTOCELL circuits on various CIRCUIT BOARDS, see table 1.

TABLE 1.

CELL	BELOW 1162 PCB	IC	POT	1162 & UP PCB	IC	POT	MINIMUM CURRENT	TURNS ON
FC 1	101	**U105**	**P106**	**108A**	uaoa	Paoa	**1 mA**	**5**
FC2	101	**U106**	**P107**	**108A**	uao5	**P805**	2mA	**5**
FC 3	102	**U205**	**P206**	**108A**	uao7	**P807**	2mA	**5**
FC4	102	**U204**	**P205**	**108A**	**U806**	**P806**	1 **mA**	**7**
FC5	105	**U501**	**P501**	**108A**	uaoi	**P801**	3mA	**5**
FC 6	105	**U502**	**P502**	**108A**	uao3	**P803**	2mA	**5**
FC 7	105	**U503**	**P503**	**108A**	uao4	Pao4	2mA	**5**

FC 6 See text for details of setting procedure.

PHOTOCELL FC 1 CASSETTE **at ENDSTOP** / FILM in **CASSETTE**

1 Unplug the CAM MOTOR and CONVEYOR BELT MOTOR from PCB **106/A/B.Open** S23 on PCB **103/A/B t(** disable the CAM MOTOR time out. Place the correct TOOL (see above) on the conveyor belt as shown in fig-1 OA. Make sure the TOOL is hard against the END STOP and the RIGHT HAND CASSETTE GUIDE. Triiger FC 2 by breaking the beam with your finger. The FC 1 LED should light. When you break the beam from FC 1 the LED should go off.

2 To check PHOTOCELL is correctly aligned, switch off the MINILOADER and remove the appropriate INTEGRATED CIRCUIT (see table 1). Connect a DIGITAL MULTIMETER set on 20 **mA** dc range between pins 3 and 4 of the vacated SOCKET Place the TOOL in position and turn on the MINILOADER and **trigger** FC 2. Slacken the FC 1 MOUNTINGS and adjust the position of the PHOTOCELL to obtain maximum current. A minimum current of 1 **mA** should be obtained.To ensure that the PHOTOCELL does not see the CASSETTE patch under the edge of a curled FILM the PHOTOCELL should be set as high as possible.

3 Switch off the MINILOADER and replace the INTEGRATED CIRCUIT removed in step 2. Switch on the MINILOADER, trigger FC 2, and set the PHOTOCELL **sensitivity** by turning the POTENTIOMETER (see table 1) anti-clockwise until the LED goes off and then clockwise until the LED lights plus 5 more turns.

4 Remove the TOOL and plug the CONVEYOR BELT and CAM MOTORS back in. Close SWITCH S 23 on PCB 103/A/B.

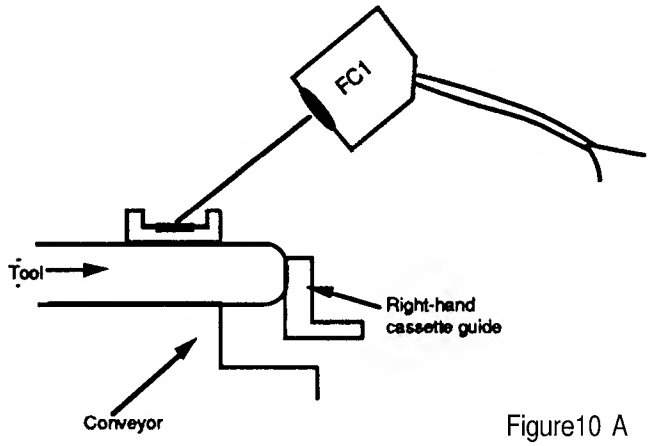


Figure10 A

PHOTOCELL FC 2 CASSETTE ENTERED

1 Unplug the CONVEYOR MOTOR from PCB **106/A/B** (see PCB **106/A). Interrupt** PHOTOCELL FC 2 and the FC 2 LED should go off.

2 To check PHOTOCELL is correctly aligned, switch off the MINILOADER and remove the appropriate INTEGRATED CIRCUIT (see table 1). Connect a DIGITAL MULTIMETER set on 20 **mA** dc range between pins 3 and 4 of the vacated SOCKET. Turn on the MINILOADER. Slacken the FC 2 MOUNTINGS and adjust the position of the PHOTOCELL to obtain maximum current. The MOUNTING BRACKET of FC 2 may need to be bent slightly to line the PHOTOCELL up correctly. A minimum current of 2 **mA** should be obtained.

3 Switch off the MINILOADER and replace the INTEGRATED CIRCUIT removed in step 2. Switch on the MINILOADER and set the PHOTOCELL sensitivity by turning the POTENTIOMETER (see table 1) **anti-**clockwise until the LED goes off and then clockwise until the LED **lights** plus 5 more turns.

4 Plug the CONVEYOR MOTOR back in.

PHOTOCELL FC 3 CASSETTE OPENED

1 Unplug the CAM MOTOR and CONVEYOR BELT **MOTOR** from PCB **106/A/B.** Open S23 on PCB 103/A/B to disable the CAM MOTOR time **out.Trigger** FC 2 by breaking the beam with your finger. The FC 3 LED should **light.** Place the correct TOOL (see above) on the conveyor belt as shown in fig **10B.** Make sure the TOOL is hard against the END STOP and the RIGHT HAND CASSETTE GUIDE. The FC 3 LED should go Off.

2 To check PHOTOCELL is correctly aligned, switch off the MINILOADER and remove the appropriate INTEGRATED CIRCUIT (see table 1). Connect a DIGITAL MULTIMETER set on 20 **mA** dc range between pins 3 and 4 of the vacated SOCKET Remove the TOOL. Turn on the MINILOADER and trigger FC 2. Slacken the FC 3 MOUNTINGS and adjust the position of the PHOTOCELL to obtain maximum current. The angle of the MIRROR may need to be altered. A minimum current of 2 **mA** should be obtained.

3 Switch off the MINILOADER and replace the INTEGRATED CIRCUIT removed in step 2. Switch on the MINILOADER, trigger FC 2, and set the PHOTOCELL **sensitivity** by turning the **POTENTIOMETER** (See table 1) anti-clockwise until the LED goes off and then clockwise until the LED **lights** plus 5 more turns.

4 Plug the CONVEYOR BELT and CAM MOTORS back in. Close SWITCH S 23 on PCB 103/A/B.

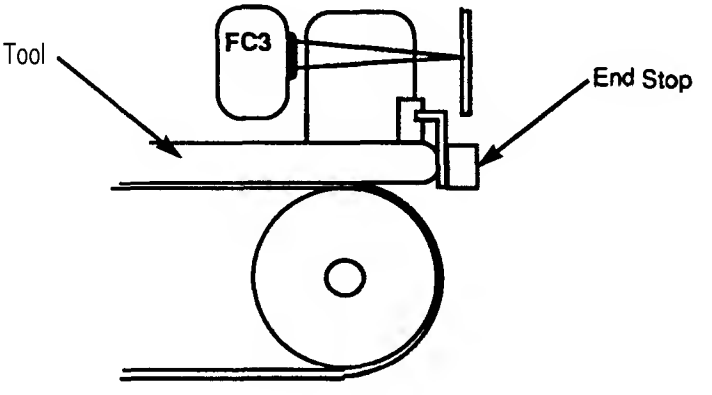


Figure **10B**

PHOTOCELL FC 4 FILM STUCK TO SCREEN

1 Unplug the CAM MOTOR and CONVEYOR BELT MOTOR from PCB **106/A/B.** Open S23 on PCB **103/A/B** to" disable the CAM MOTOR time out. Place the correct TOOL (see above) on the conveyor belt as shown in fig **10C.** Make sure the TOOL is hard against the END STOP and the RIGHT HAND CASSETTE GUIDE. Trigger FC 2 by breaking the beam with your finger. The FC 4 LED **should** light. When you remove the TOOL the FC 4 LED should go off.

2 To check PHOTOCELL is correctly aligned, switch off the MINILOADER and remove the appropriate INTEGRATED CIRCUIT (see
table 1). Connect a DIGITAL MULTIMETER set on 20 **mA** dc range between pins 3 and 4 of the vacated SOCKET. Turn on the MINILOADER and trigger FC 2. Slacken the FC 4 MOUNTINGS and adjust the position of the PHOTOCELL to obtain maximum current. The MOUNTING BRACKET for FC 4 may need reforming. A minimum current of 1 **mA** should be obtained.

3 Switch off the MINILOADER and replace the INTEGRATED CIRCUIT removed in step 2. Put the TOOL back into position. Switch on the MINILOADER, trigger FC 2, and set the PHOTOCELL **sensitivity** by turning the POTENTIOMETER (see table 1) anti-clockwise until the FC 4 LED goes off and then clockwise until the LED lights plus 7 more turns.

4 Remove the TOOL and plug the CONVEYOR BELT and CAM MOTORS back in. **Close** SWITCH S 23 on PCB 103/A/B.

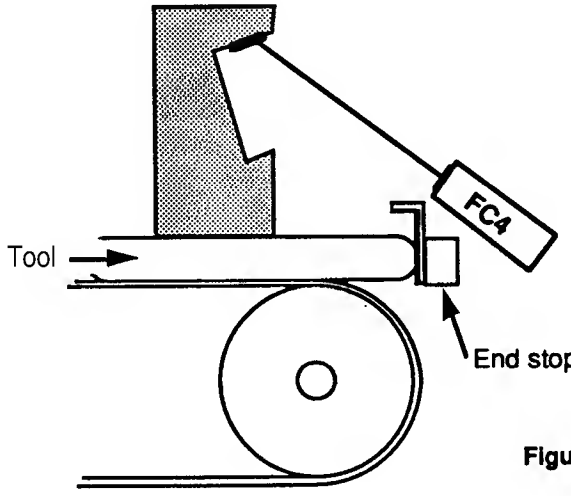


Figure 10C

PHOTOCELL FC 5 SUPPLY MAGAZINE NEARLY EMPTY
Serialnumber 1101 to 1161 EXCEPT MACHINES WITH SERIAL NO. SUFFIX M

1 Unplug the CONVEYOR MOTOR from PCB 106. Place 13 TEST FILMS in the SUPPLY MAGAZINE. Trigger FC 2 with your finger, then using the JOG SWITCH (S 16 on PCB **106),** run the CAM MOTOR until the MAGAZINE INJECTOR BAR drops down onto the FILM STACK. The FC 5 LED on PCB 105 should not light. Reset the MINILOADER. Repeat with 7 TEST FILMS in the SUPPLY MAGAZINE and the FC 5 LED on PCB 105 should now come on. Adjustment of the operating point is by altering the angle and height of the MIRROR on the MAGAZINE INJECTOR BAR. Note that the LED **latches when it lights, so every** time it comes on you have to power down to clear it. On late model MINILOADERS the PHOTOCELL MOUNT has **slots** to facilitate the adjustment and the PHOTOCELL can also be moved up and down (this MOUNT can be fitted to earlier MINILOADERS, the part number is unchanged). Reset the **MINILOADER** after the adjustment.

2 If you are unable to obtain the signal from the PHOTOCELL do the following. Switch off the MINILOADER and remove INTEGRATED CIRCUIT **U501** from PCB 105. Connect a DIGITAL MULTIMETER set on 20 **mA** dc range between pins 3 and 4 of the vacated SOCKET Turn on the MINILOADER and trigger FC 2. Place a MIRROR in front of FC 5 and measure the current. A minimum current of 3 **mA should** be obtained. Switch off the MINILOADER and replace the INTEGRATED CIRCUIT removed in step **2.** Switch on the MINILOADER, trigger FC 2, hold a MIRROR in front of the PHOTOCELL and set the PHOTOCELL sensitivity by turning the POTENTIOMETER (see table 1) clockwise until the FC 5 LED on PCB 105 goes off. Switch off the MINILOADER, wait 10 seconds and turn it on again. Trigger FC 2. **With** the mirror in front of the PHOTOCELL turn the POTENTIOMETER anti-clockwise until the LED **lights** plus 5 more turns. Note that the LED latches when it lights, so every time it comes on you have to power down to clear it.

3 Plug the CONVEYOR BELT MOTOR back in.

PHOTOCELL FC 5 SUPPLY MAGAZINE NEARLY EMPTY.
Serial number 1162 and up AND 1101M TO 1161 M

1 Unplug the CONVEYOR MOTOR from PCB **106A/B.** Place 13 TEST FILMS in the SUPPLY MAGAZINE. Triiger FC 2 with your finger, then using the JOG SWITCH (S 16 on PCB **106A/B),** run the CAM MOTOR until the MAGAZINE INJECTOR BAR drops down onto the FILM STACK. The FC 5 LED on PCB 108A should not light. Reset the MINILOADER. Repeat with 7 TEST FILMS in the SUPPLY MAGAZINE and the FC 5 LED on PCB 108A should now come on. Adjustment of the operating point is by altering the angle and height of the MIRROR on the MAGAZINE INJECTOR BAR. On late model MINILOADERS the PHOTOCELL MOUNT has **slots** to facilitate the adjustment and the PHOTOCELL can also be moved up and down (this MOUNT can be fitted to earlier MINILOADERS, the part number is unchanged). Reset the MINILOADER after the adjustment.

2 If you are unable to obtain the signal from the PHOTOCELL do the following. Switch off the MINILOADER and remove the INTEGRATED CIRCUIT **U801** from PCB **108A.** Connect a DIGITAL MULTIMETER set on 20 **mA** dc range between pins 3 and 4 of the vacated SOCKET. Turn on the MINILOADER and trigger FC 2. Place a MIRROR in front of FC 5 and measure the current. A minimum current of 3 **mA** should be obtained. Switch off the MINILOADER and replace the INTEGRATED CIRCUIT removed in step 2. Switch on the MINILOADER, **trigger** FC 2, hold a MIRROR in front of the PHOTOCELL and set the PHOTOCELL sensitivity by turning the POTENTIOMETER (see table 1) anti-clockwise until the FC 5 LED on PCB **108A** goes off and then clockwise until the LED lights plus 5 more turns.

3 Plug the CONVEYOR BELT MOTOR back in.

PHOTOCELL FC 6 SUPPLY MAGAZINE EMPTY

Serial number 1101 to 1161

1 Place an empty SUPPLY MAGAZINE in the MINILOADER. Unplug the CONVEYOR MOTOR from PCB 106. Trigger the MINILOADER by obscuring FC 2. Lii the SUPPLY MAGAZINE LID by hand and the FC 6 LED on PCB 105 should light. Turn the MINILOADER off, wait 10 seconds and switch **it** back on. Repeat with 1 Film in the MAGAZINE and the LED should stay off.

2 To check PHOTOCELL is correctly aligned, switch off the MINILOADER and remove INTEGRATED **CIRCUIT U501** on PCB 105. Connect a DIGITAL MULTIMETER set on 20 **mA** dc range between pins 3 and 4 of the vacated SOCKET. Turn on the MINILOADER and trigger FC 2. Hold the SUPPLY MAGAZINE LID open. Slacken the FC 6 MOUNTINGS and adjust the position of the PHOTOCELL to obtain maximum current. A minimum current of 2 **mA** should be obtained1

3 Switch off the MINILOADER and replace the INTEGRATED CIRCUIT removed in step 2. Turn the POTENTIOMETER **P502** on PCB 105 fully clockwise. Switch on the MINILOADER, trigger FC 2, hold the SUPPLY MAGAZINE LID open and set the PHOTOCELL sensitivity by turning the POTENTIOMETER **P502** on PCB 105 anti-clockwise until the FC 6 LED on PCB 105 **lights** plus 5 more turns. Note that the LED latches when **it** lights, so every time it comes on you have to power down to clear **it.**

4 Plug the CONVEYOR MOTOR back in.

Serial number 1162 and up

1 Place an empty SUPPLY MAGAZINE in the MINILOADER. Unplug the CONVEYOR MOTOR from PCB **106A/B.** Trigger the MINILOADER by obscuring FC 2. **Lift** the SUPPLY MAGAZINE LID by hand and the FC 6 LED on PCB 108A should light. Repeat with 1 Film in the MAGAZINE and the LED should stay off.

2 To check PHOTOCELL is correctly aligned, switch off the MINILOADER and **remove** INTEGRATED CIRCUIT **U803** on PCB 108A. Connect a DIGITAL MULTIMETER set on 20 **mA** dc range between pins 3 and 4 of **thr** vacated SOCKET. **Turn** on the MINILOADER and trigger FC 2. Hold the SUPPLY MAGAZINE LID open. Slacken the FC 6 MOUNTINGS and adjust the position of the PHOTOCELL to obtain maximum current. A minimum current of 2 **mA should** be obtained.

3 Switch off the MINILOADER and replace the INTEGRATED CIRCUIT removed in step 2. Switch on the MINILOADER, trigger FC 2, hold the SUPPLY MAGAZINE LID open and set the PHOTOCELL sensitivity by turning the POTENTIOMETER (see table 1) anti-clockwise until the FC 6 LED on PCB 108A goes off and then clockwise until the LED lights plus 5 more turns.

4 Plug the CONVEYOR MOTOR back in.

PHOTOCELL FC 7 PROCESSOR INTERFACE VERSION FILM JAMMED IN TUNNEL

1 Trigger FC 2 with your finger, the FC 7 LED should be on. Place a FILM in the TUNNEL and the LED should go off.

2 To check PHOTOCELL is correctly aligned, switch off the MINILOADER and remove the appropriate INTEGRATED CIRCUIT (see table 1). Connect a DIGITAL MULTIMETER set on 20 **mA** dc range between pins 3 and 4 of the vacated SOCKET. Turn on the MINILOADER and trigger FC 2. Slacken the FC 7 MOUNTINGS and adjust the position of the PHOTOCELL to obtain maximum current. A minimum current of 2 **mA** should be obtained.

3 Switch off the MINILOADER and replace the INTEGRATED CIRCUIT removed in step 2. Switch on the MINILOADER, trigger FC 2, and without a FILM in the TUNNEL set the PHOTOCELL **sensitivity** by turning the POTENTIOMETER (see table **1):-** [serial number 1101 to **1161]** clockwise until the FC 7 LED goes off and then anti-clockwise until the LED lights plus 5 more turns. [serial number 1162 and up] anti-clockwise until the FC 7 LED goes off and then clockwise until the LED lights plus 5 more turns.

4 Repeat step **1.**

PHOTOCELL FC 7 STAND ALONE VERSION SUPPLY MAGAZINE FULL

1 Place 95 TEST FILMS in a RECEIVING MAGAZINE and put the magazine in the MINILOADER. **Trigger** the MINILOADER by obscuring FC 2. **Lift** the RECEIVING MAGAZINE LID by hand and the FC 7 LED should light. Repeat **with** 105 FILMS in the MAGAZINE and the LED should stay off. If necessary slacken the MOUNTING SCREWS of FC 7 and alter the angle of the PHOTOCELL.

2 If you are unable to get a signal do the following. Empty the RECEIVING MAGAZINE. **Switch** off the MINILOADER and remove the appropriate INTEGRATED CIRCUIT (see table 1). Connect a DIGITAL MULTIMETER set on 20 **mA** dc range between pins 3 and 4 of the vacated SOCKET. Turn on the MINILOADER and trigger FC 2. Open the RECEIVING MAGAZINE BY HAND and measure the current obtained. A minimum current of 2 **mA** should be obtained.

3 Switch off the MINILOADER and replace the INTEGRATED CIRCUIT removed in step 2. Switch on the MINILOADER, trigger FC 2, and with an empty RECV. MAGAZINE in the MINILOADER, **hold** the MAGAZINE LID open by hand and set the PHOTOCELL **sensitivity** by turning the POTENTIOMETER (see table **1):-** [serial number 1101 to **1161]** cbckwise until the FC 7 LED goes off and then **anti-clockwise** until the LED lights plus 5 more turns. [serial number 1162 and up] **anti-clockwise** until the FC 7 LED goes off and then clockwise until the LED lights plus 5 more turns.

4 Repeat step 1.

PHOTOCELL FC 6 MULTIPLE FILM FEED

	SERIAL NO. BELOW 1162			SERIAL NO. 1182 & UP		
	PCB	IC	PDT	PCB	IC	POT
EMITTER CURRENT CONTROL	lo8	-	P809	108A	_	P809
DETECTOR CIRCUIT	105	U504	P504	108A	U802	P802

The MULTIPLE FILM DETECTOR varies from the other PHOTOCELL circuits in that there is a POTENTIOMETER to set the current of the infra-red **emitter** as well as a POTENTIOMETER in the **comparitor** circuit.

1 Turn off the MINILOADER. Unplug FC 6 from PCB 106/A. Release the PIN **with** the red WIRE from the PLUG , replace the PLUG and connect a DIGITAL **MULTIMETER** set on 200 **mA** dc range between the removed PIN and **its** original position in the PLUG.

2 Unplug the CONVEYOR MOTOR from PCB **106/A/B.** Turn on the MINILOADER, trigger FC 2 and set the EMITTER current to 65 **mA** by adjusting the current control **POTENTIOMETER P809.**

3 Turn the detector circuit POTENTIOMETER (see above) anti- clockwise until the FC 6 LED goes off, then clockwise until **it** comes on plus 3 more turns. Turn off the MINILOADER and reconnect the CONVEYOR MOTOR.

4 If possible use new FILM for this test. Run a test cycle picking a FILM from the SUPPLY MAGAZINE, the MULTIPLE FILM DETECTOR INDICATOR on the CONTROL PANEL **should** stay off. Stick two FILMS together (don't put tape on the part of the FILM the DETECTOR scans) and run a cycle. The MULTIPLE FILM DETECTOR INDICATOR on the CONTROL PANEL should now light. If the DETECTOR detects single FILMS as MULTIPLE LOADS), increase the EMITTER current by 5 **mA** (see step **2),** and repeat steps 3 and 4. If the MULTIPLE LOAD is not detected return to step 2, reduce the EMITTER current by 5 **mA** and repeat steps 3 and 4. Continue until satisfactory detection is obtained.

5 Remove the DIGITAL MULTIMETER and replace the WIRE removed in step 1.

REMOVALS

Remove the COMPRESSOR

For DIAGRAMS see PARTS LIST PAGE 9

1 Disconnect the HOSE.
2 Disconnect the three WIRES.
3 Remove the three countersunk SCREWS from underneath the machine. Use grips to hold the **lower** part of the MOUNTINGS to avoid damaging them.
4 If changing the COMPRESSOR, transfer the MOUNTINGS to the new COMPRESSOR.
5 To refit the COMPRESSOR reverse the removal procedure.
Make sure that the hose does not **run** on the CAMS after **refitting.**

Remove a VACUUM PUMP

For DIAGRAMS see PARTS LIST PAGE 11

1 Remove the LID, the FRONT PANEL and the left SIDE PANEL from the Minibader.
2 Disconnect the HOSE from the PUMP.
3 Disconnect the **live,** neutral and earth wires from the PUMP
4 Remove the other two MOUNTING SCREWS from the PUMP and withdraw it.
5 To refit the PUMP reverse the removal procedure.

Remove **the CAMSHAFT**

For DIAGRAMS see PARTS LIST PAGES 14- 15

1 Remove the LID, the REAR PANEL and the two SIDE PANELS from the Minibader. Remove the MAGAZINES.
2 Remove the two CAMSHAFT END BEARING HOUSINGS complete (3 SCREWS each).
3 Lift the CHAIN off the MOTOR SPROCKET. There is no need to splii the CHAIN.
4 Unfasten the two PUSH ROD ENDS from the drive side CAM (the CASSETTE OPENING CAM).
5 Loosen the GRUB SCREWS on the two large CAMS and SPROCKET.
6 Carefully peel hack the LIGHT TACK and remove the three countersunk SCREWS from the drive side (cassette opening) cam support bracket.
7 Slide the SHAFT towards the non-drive side to provide sufficient room to remove the drive side CAM and BRACKET assembly complete.
8 Withdraw the CAMSHAFT assembly from the drive side of the Minibader.
9 To refit, reverse the removal procedure.

Remove the CASSETTE CONVEYOR BELT

For DIAGRAMS see PARTS LIST PAGES 20-23

1 Remove the LID, the FRONT PANEL and the two side panels from the Minibader.
2 Dismount the CONVEYOR BELT DRIVE MOTOR and MOUNTING BRACKET complete.
3 Lift the DRIVE CHAIN from the SPROCKETS. **It** is not necessary to split the CHAIN.
4 Loosen the GRUB SCREW and remove the GEAR/SPROCKET from the drive side of the CONVEYOR DRIVE ROLLER. Remove the WOODRUFF KEY.
5 Release the tension from the BELT by slackening the rear ROLLER BEARING HOUSINGS and **CONVEYOR** TENSIONING SCREWS.
6 Remove the drive side front roller CIRCLIP and **both** BEARING HOUSINGS complete (3 screws each). Remove the CIRCLIP from the drive side of the ROLLER.
7 Remove the CONVEYOR DRIVE ROLLER FROM THE MINILOADER.
6 Remove the CIRCLIP from the drive side of the REAR CONVEYOR ROLLER then remove the BEARING HOUSINGS (2 screws each). Remove the second CIRCLIP from the drive side of the ROLLER. Remove the four countersunk SCREWS **holding** the CENTRE WEB.
9 Withdraw the rear CONVEYOR ROLLER from the Minibader.
10 Wiihdraw the CENTRE WEB and CONVEYOR BELT from the Minibader.
11 To refit the CONVEYOR BELT, reverse the removal procedure. Make sure, when refastening the WEB, that the CASSETTE GUIDES are set wide enough to accept a CASSETTE, and the BELT is evenly tensioned .

*REMOVALS **(CONTINUED)***

Remove the TILT **MOTOR (Machines without lift before tilt)**
For DIAGRAMS see PARTS LIST PAGES 34-35
1 Remove the LID and left hand side COVER from the Minibader.
2 Release the lower end of the TILT PUSH ROD from the TILT CAM by removing the setscrew and bush.
3 Unplug the MOTOR.
4 Remove the four SCREWS fastening the MOUNTING BRACKET (two are **behind** the LIGHT TACK) and withdraw the assembly complete.
5 Remove the CAM from the MOTOR and unfasten the three mounting screws. The MOTOR is now free.
6 To refit, reverse the removal procedure.

Remove the TILT MOTOR (Machines with lift before tilt)
For DIAGRAMS see PARTS LIST PAGES 34-35
1 Remove the LID and left hand side COVER from the Minibader.
2 Release the lower end of the TILT PUSH ROD from the TILT CAM FOLLOWER by removing the setscrew and bush.
3 Unplug the MOTOR.
4 Remove the two SCREWS fastening the MOUNTING BRACKET (behind the LIGHT TACK) and withdraw the assembly complete.
5 Unfasten the three MOTOR MOUNTING SCREWS. The CAM and MOTOR ASSEMBLY is now free.
6 To **refit,** reverse the removal procedure.

Remove the MAGAZINE (load) SUCKER BAR.
*For DIAGRAMS see PARTS LIST PAGE **32.***
1 Remove the top and left side COVER of the MINILOADER.
2 Slacken the two GRUB SCREWS **which** clamp the SUCKER BAR to the SHAFT. (The clamping SCREWS are at 90 degrees to each other, do not touch the third SCREW).
3 Carefully slide the SUCKER BAR from the SHAFT. Note there is an internal **"O"** RING in the BAR to seal the vacuum, check the condition and lubricate slightly with silicone grease when **refitting.**

Remove the MAGAZINE COMPENSATOR ASSEMBLY.
For DIAGRAMS see PARTS LIST PAGE 31.

This assembly compensates for the height of the FILM STACK in the SUPPLY MAGAZINE so the pressure of the SUCKERS on the FILMS remains constant.

1 Remove the top and left side COVERS of the MINILOADER.
2 Mark the mesh of the gear teeth.
3 Support the SUCKER bar **arm** and disconnect the **lower** PUSH ROD END.
4 Remove the **CIRCLIP** and the BEARING HOUSING (3 SCREWS) note **position** of SPACER and remove.
5 Loosen grub SCREW at rear of COMPENSATOR, withdraw SHAFT and **lift** out COMPENSATOR assembly.
6 Before attempting to strip down the COMPENSATOR, screw a 5 mm SCREW into the threaded hole in the side of the mechanism to prevent the SPRING inside jumping out when the two halves are separated. Separate and replace parts as necessary.
7 When reassembling, use the 5 mm SCREW (fitted in step 6) to release the spring tension **slightly** so the two halves can be engaged. do not forget to remove the SCREW after refitting the COMPENSATOR. Make sure the GEARS are meshed correctly as marked earlier.

REMOVALS (CONTINUED)

Removal of MAGAZINE SUCKER ARM ACTUATING ASSEMBLY.
For DIAGRAMS see PARTS LIST PAGE 30.
1 Remove the top and left side PANELS from the MINILOADER.
2 Mark the mesh of the GEARS.
3 Remove SCREW holding the VACUUM TUBE CLAMP and disconnect the TUBE.
4 Remove the CIRCLIP and withdraw TILT LEVER from the SHAFT.
5 Remove BEARING HOUSING (3 SCREWS and CIRCLIP), note position of SPACER and remove. Unhook SPRING from INJECTOR BAR CONTROL RING, and disconnect INJECTOR air supply TUBE.
6 Loosen INJECTOR CLAMPING COLLAR GRUB SCREWS (not the socket head SCREWS which clamp the INJECTOR ARM!) Support the assembly and withdraw the SHAFT, the assembly can now be removed.
7 To **refit** reverse the removal instructions making sure the GEARS are meshed as marked earlier.

Remove the CASSETTE SUCKER BAR ACTUATING ASSEMBLY.
For DIAGRAMS see PARTS LIST PAGE 29.
1 Remove the top and left side COVER from the Miniloader.
2 Mark the mesh of the gear teeth.
3 Disconnect the vacuum pipe from the SUCKER BAR and remove the **tiewraps** from the arm noting the position of them.
4 Remove the SCREWS fixing the SHAFT to the support bracket, the complete assembly can now be removed.
5 To refit reverse the removal procedure, fitting new tiewraps.

FUSES Serial Number 1161 and lower

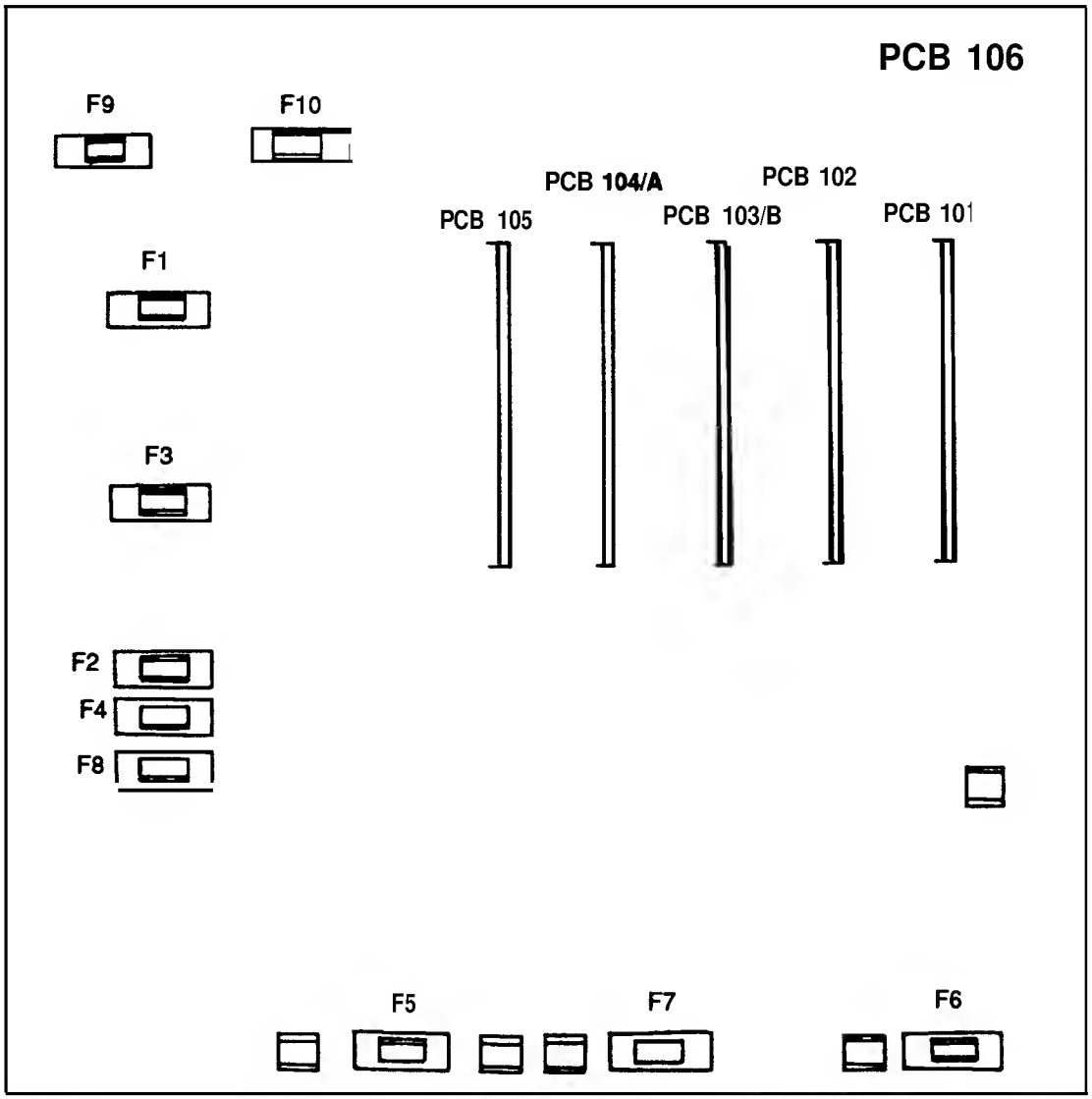


Figure 11

FI 4 amp **(slow** blow) COMPRESSOR
F2 2 amp **(slow blow)** CASSETTE VACUUM PUMP MOTOR
F3 2 amp **(slow blow)** MAGAZINE VACUUM PUMP MOTOR
F4 2 amp **(slow blow)** FAN
F5 2 amp **(slow blow)** TILT MOTOR

F6 6.3 amp (quick blow) CONVEYOR BELT
F7 4 amp **(slow blow)** CAM MOTOR
F8 6.3 amp (quick **blow)** TRANSFORMER primary
F9 8 amp (quick **blow)** TRANSFORMER secondary for stabilised power supply
F10 8 amp (quick **blow)** D.C. 12 **volt** stabilised
F11 8amp (quick blow) TRANSFORMER A.C. secondary for **M5,** M6 and M7
Note: Fuse **F11** is positioned on the transformer in these models

FUSES Serial Number 1162 and up

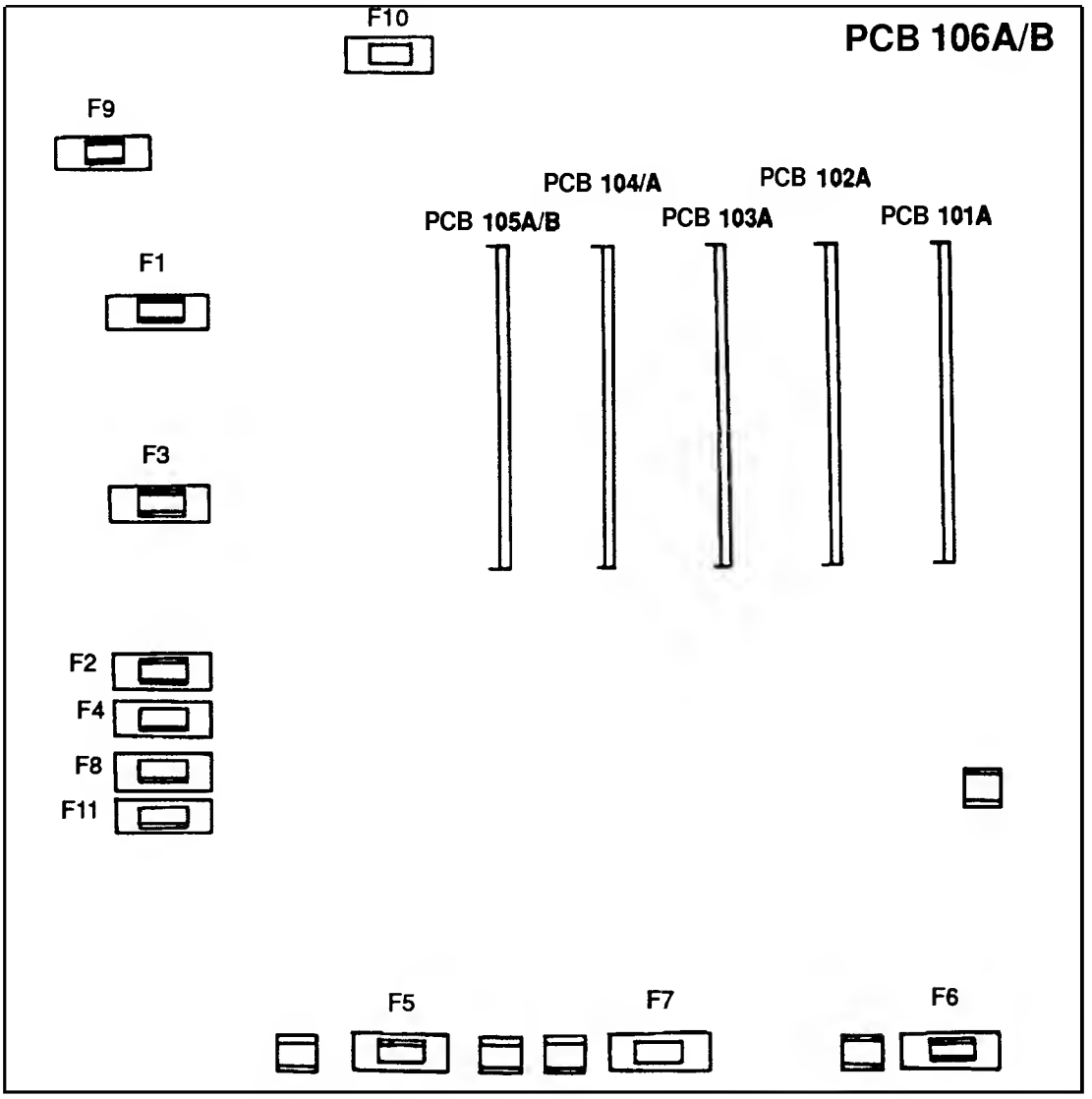


Figure 12

F1 4 amp (slow blow) COMPRESSOR
F2 **2 amp (slow** blow) CASSETTE VACUUM PUMP MOTOR
F3 2 amp (slow blow) MAGAZINE VACUUM PUMP MOTOR
F4 2 amp (slow blow) FAN
F5 2 amp (slow blow) TILT MOTOR

F6 6.3 amp (quick blow) CONVEYOR BELT
F7 4 amp (slow blow) CAM MOTOR
F8 6.3 amp (quick blow) TRANSFORMER primary
F9 8 amp (quick blow) TRANSFORMER secondary for stabilised power supply
F10 8 amp (quick blow) D.C. 12 volt stabilised
F11 8 amp (quick blow) TRANSFORMER A.C. secondary for **M5,M6** and M7

SWITCHES

CB-1 **Main CIRCUIT BREAKER.**
S-16 Cam motor jog switch (on PCB **106/A/B)**
s-17 UNLOAD ONLY, on **PCB** 107/A.
S-18 **SERIAL MODE start,** on **PCB** 107/A.
s-19 SERIAL MODE interrupt, on PCB **107/A.**
s-20 Reset CAMS to "HOME POSITION", on PCB 107/A.
s-21 CASSETTE eject, on PCB 107/A.
s-22 ***(Fitted** on machines up to serial number **1** 16 **1)***
Open - Controls CAM pause for CASSETTE INJECTOR if FILM is stuck to SCREEN.
Closed - Adjusts MINILOADER cycle **time** to suit PROCESSOR cycle time on PCB 101
S-23 Timer **T9** inhibit (used in step by step cycle), on PCB 103/A.
S-24 Key switch (up to serial number 1216 overrides S25, after serial number **1217** overrides S25, S26 & S27).
S-25 Top COVER interlock SWITCH.
S-26 Front DOOR interlock SWITCH (serial number 1217 and **up).**
S-27 **Receiving MAGAZINE DOOR interlock SWITCH** - Stand **alone** version **only (serial number 1217 and up).**

MICROSWITCHES - Serial No. 1101 - 1216

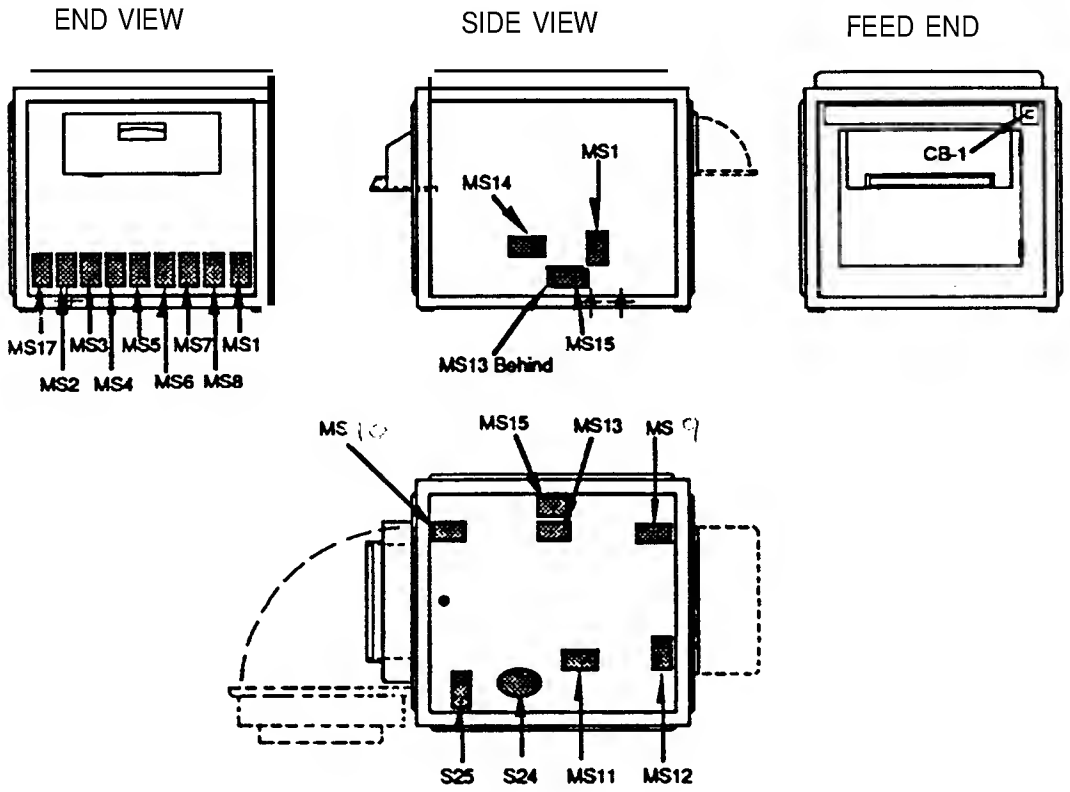


Figure 14

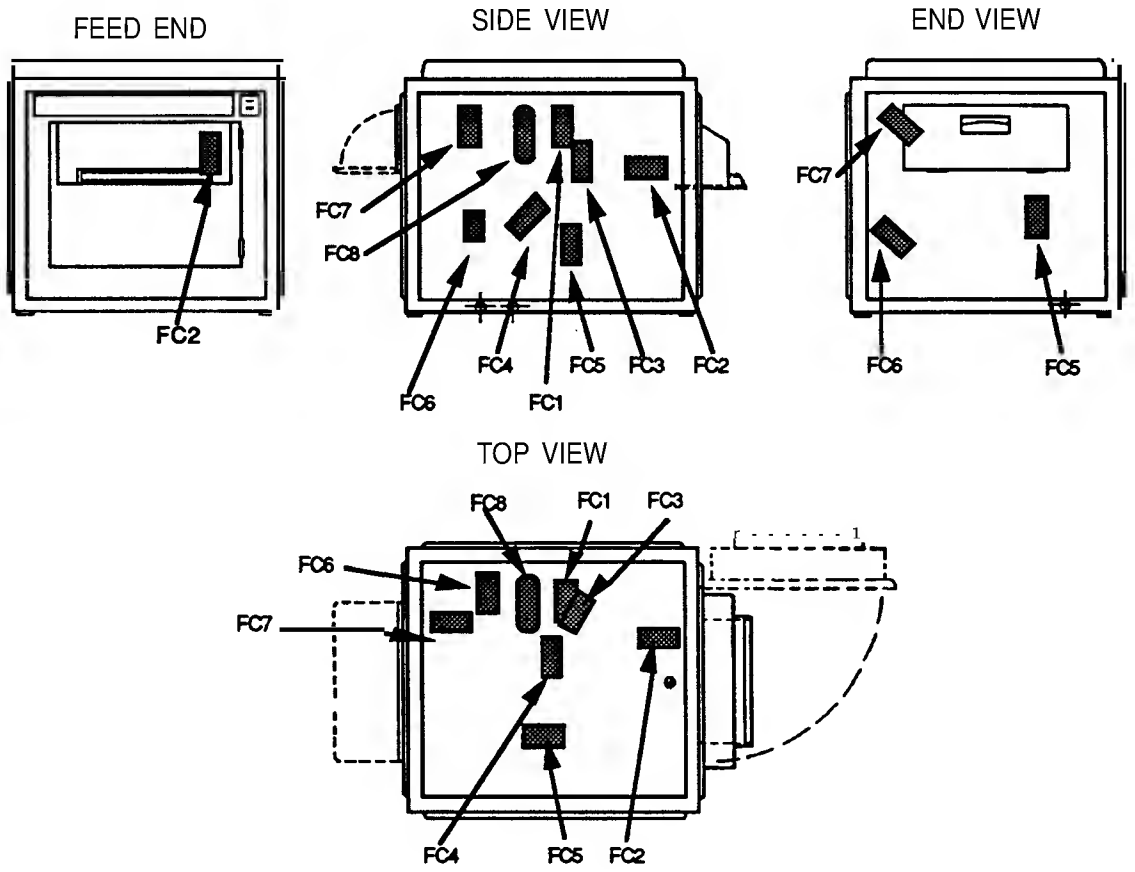
MS1 CAMS in home position (NOTE: on machines with Serial **Numbers** 1101 to 1106 MS1 is in position now occupied by MS1 **7)**
MS2 Stops CAMS to pick up exposed and unexposed FILM
MS3 Checks for FILM on SCREEN via **FC4**
MS4 Starts return of TILT MOTOR to horizontal posftbn.
MS5 Checks CASSETTE LID **is** open via FC3

MS6 Vents vacuum release of exposed and unexposed FILM
MS7 Checks film picked up from CASSETTE via **FC1**
MS6 Checks film jammed **in TUNNEL** for Processor **!nterface** version
or, exposed film MAGAZINE full for Stand-alone version
MS9 FRONT DOOR **interlock** (up to Serial Number 1216 **only)**
MS10 Exposed FILM MAGAZINE DOOR **interlock** (up to Serial **Number** 1216 stand-alone version only)

MS11 Exposed film MAGAZINE present (for Stand-alone version)
MS12 Unexposed film MAGAZINE present
MS13 Stops TILT MOTOR in horizontal position
MS14 Stops TILT MOTOR in tiltp position
MS15 Stops continuous cycles of TILT MOTOR when MS4 is energised during jog cycle (Serial Numbers 1107 and **up)**

MS16 Allows time for unexposed FILM to cover LOWER CASSETTE REFLECTOR before **FC1** checks
MS17 Stops CAM for INJECTOR operation - CASSETTE lid just open (Serial Number 1162 and up)

PHOTOCELLS



FC-1 **CASSETTE** at end stop and film in CASSETTE
FC-2 CASSETTE entered
FC-3 CASSETTE LID opened
FC-4 FILM on LID
FC-5 SUPPLY MAGAZINE nearly empty (approximately 10 films)

FC-6 SUPPLY **MGAZINE** empty
FC-7 RECEIVING MAGAZINE full or film jammed in tunnel
FC-8 Multiple FILM bad detector

TIMERS FOR SERIAL NUMBERS BELOW 1162

TIMER	POTENTIOMETER PCB	TO INCREASE	STANDARD VALUE		FUNCTION
T1	P103	101	Anti-clockwise	2.5 Secs	Tii out to start CONVEYOR in reverse it CASSETTE is entered incorrectly.
T2	P302	103/B	Anticlockwise	3secs	CAM pause for FILM pick up and TILT.
T3	P203	102	Anti&&wise	8 Secs	CAM pause for CASSETTE INJECTOP if FILM is stuck (S22 closed) on upper SCREEN.
The delay is adjustable up to approximately 20 secs to adjust the cycle time of lhe MINILOADER to suit the cycle time of the PROCESSOR being used. With S22 open thii delay then occurs every cycle, but the INJECTOR only blows if a film is detected on the SCREEN by FC4.					
T4	P304	103/B	Clockwise	1 Sec	Delay for FILM pick up before TILT MOTOR starts.
T5	P204	102	Anti-clockwise	1 Sec	Delays CONVEYOR reverse after 'HOME POSITION" is reached to give the CASSETTE LID lime to drop to prevent the LATCH catching on the SHOVEL.
T6	P104	101	Anti-clockwise	3 Secs	CONVEYOR MOTOR reverse time after CASSETTE has reached FC2 at end of cycle b eject CASSETTE.
T7	P401	104/A	Anti-clockwise	1 Sec	Opens SV1 and SV2 at start of cycle because the COMPRESSOR cannot start against a closed system.
T8	P402	104/A	Anticlockwise	1 Sec	Cam pause to drop unexposed FILM back into the supply MAGAZINE if the FILM has not been removed from the CASSETTE.
T9	P301	103/B	Anti-clockwise	10 Secs	Aborts the cycle if the CAM MOTOR ha not been energized and more than the set time has elapsed. Disabled if S23 is open (for STEP BY STEP cycle).

TIMERS FOR SERIAL NUMBERS BELOW 1162 (continued)

TIMER	POTENTIOMETER	PCB	TO INCREASE	STANDARD VALUE	FUNCTION
T10	P305	103	Anti-clockwise	osec	Serial number 1101 to 1124 and 1126 - Delays CAM MOTOR starting after the CASSETTE arrives at END STOP (ii needed).
	P305	1038	Anticlockwise	1 Sec	Serial number 1125 and 1127b 1161 - When CAM MOTOR reverses after a "CASSETTE failed to open', ensures "HOME POSITION' is reached after MS1 operates
T11	P701	107/A	Anti-clockwise	1 Sec	Buzzer on time.
T12	P105	101	Anti-clockwise	1 Sec	Delay after power-up b allow FC2 time to stabilize.
TL & L	P306	103/B	Anti-clockwise	0.5 Sec	CASSETTE INJECTOR control. (TL controls the time of each indiviial bbw and L controls the pause between them)
	P307	103/B	Anti-clockwise	2.5 Sec	NB:- The two potentiometers interact when adjustments are being made.

TIMERS FOR SERIAL NUMBERS 1162 AND UP

TIMER	POTENTIOMETER PCB TO INCREASE	STANDARD VALUE		FUNCTION
T1	P103	101 A Anti-clockwise	2.5 Secs	Time out to start CONVEYOR in reverse if the CASSETTE is entered incorrectly
T2	P302	103A Anti-clockwise	3 sec	CAM pause br FILM pick up and TILT.
T3	P203	102A Anticlcckwise	8 Sec	CAM pause br CASSETTE INJECTOR FILM is stuck on upper SCREEN.
T4	P304	103A Clockwise	1 Sec	Delay for FILM pick up before TILT MOTOR starts.
T5	P204	102A Anti-clockwise	1 Sec	Delays CONVEYOR reverse after "HOME POSITION" is reached to give the CASSETTE LID time to drop to prevent the LATCH catching on the SHOVEL.
T6	P104	101 A Anticlcckwise	3 Secs	CONVEYOR MOTOR reverse time after CASSETTE has reached FC2 at end of cycle b eject CASSETTE.
T7	P401	104/A Anti-clockwise	1 Sec	Opens SV1 and SV2 at start of cycle because the COMPRESSOR cannot start against a closed system.
T8	P402	104/A Anti-clockwise	1 Sec	Cam pause to drop unexposed FILM back into the supply MAGAZINE if the FILM has not bean removed from the CASSETTE.After aerial number 1217 and on machines above 1162 with PCB's 104A, 105B & 106B fitted thii timer is also used to give the MULTIPLE FILM DETECTION pause.
T9	P301	103A Anticlockwise	10 Secs	Aborts the cycle if the CAM MOTOR has not been energized f and more than the set time has elapsed. Disabled if S23 is open (for STEP BY STEP cycle).

TIMERS FOR SERIAL NUMBERS 1162 AND UP (continued).

TIMER	POTENTIOMETER PCB TO INCREASE	STANDARD VALUE		FUNCTION
T10	P305	103A Anticlcckwise	1 Sec	When CAM MOTOR reverses after a 'CASSETTE failed to open', ensures "HOME POSITION' is reached after MS1 operates.
T11	P701	107/A Anticlockwise	1 Sec	Buzzer on time.
T12	P105	101 A Anticlockwise	1 Sec	Delay after power-up to allow FC2 time b stabilize.
T13	P303	103A Anti-clockwise	2 Secs	CAM pause b operate CASSETTE INJECTOR in every cycle with the CASSETTE LID open one centimetre.
T14	P101	101 A Anti-clockwise	0 to 20 Secs	Adjust to suit cycle time of the PROCESSOR beii used. Set to minimum for STAND ALONE version.
TL	P202	102A Anticlockwise	0.5 Sec	CASSETTE INJECTOR control. (TL controls the time of each individual blow and L controls the pause between them) NB:- The two POTENTIOMETERS interact when adjustments am being made.
&				
L	P201	102A Anti-clockwise	2.5 Sec	

PHOTOCELLS FOR SERIAL NUMBERS 1101 TO 1161

CELL	POTENTIOMETER	PCB	TO INCREASE	FUNCTION
FC1	P106	101	Clockwise	CASSETTE at end stop / FILM in CASSSETTE 1
FC2	P107	101	Clockwise	CASSETTE entered
FC3	P206	102	Clockwise	CASSETTE opened
FC4	P205	102	Clockwise	FILM stuck to SCREEN
FC5	P501	105	Antictockwise	SUPPLY MAGAZINE contains fewer than 10 FILMS
FC6	P502	105	Anti-clockwise	SUPPLY MAGAZINE empty
FC7	P503	105	Anti-clockwise	RECEIVING MAGAZINE full - Stand alone FILM jammed in TUNNEL - Procesor Interface version
FC8	P504 &P809	105 108	See cell *setup* Clockwise	MULTIPLE FILM detector (receiver) LED current control (sender)

PHOTOCELLS FOR SERIAL NUMBERS 1162 and up

CELL	POTENTIOMETER	PCB	TO INCREASE	FUNCTION
FC1	P808	108A	Clockwise	CASSETTE at end stop / FILM in CASSSETTE
FC2	P805	108A	Cbckwise	CASSETTE entered
FC3	P807	108A	Clockwise	CASSETTE opened
FC4	P806	108A	Clockwise	FILM stuck to SCREEN
FC5	P801	108A	Clockwise	SUPPLY MAGAZINE contains fewer than 10 FILMS
FC6	P803	108A	Clockwise	SUPPLY MAGAZINE empty
FC7	P804	108A	Clockwise	RECEIVING MAGAZINE full - Stand alone FILM jammed in TUNNEL - Procesor Interface version
FC8	P802 &P809	108A 108A	See cell *setup* Clockwise	MULTIPLE FILM detector (receiver) LED current control (sender)

Printed Circuit Boards for Miniloader Model 1

PRINTED CIRCUIT BOARDS.

Original **PCB's.**

The following is a list of the **PCB's** fitted at manufacture to machines with the following Serial Numbers.

Replacement.

When you order a replacement board always order the latest version which can be fitted to the machine (see Table 2). Check tables 2 & 3 before ordering a replacement board.

Table 1

Serial number range	Original printed circuit boards fitted
1101 to 1124 & 1126	101 102 103 104 105 106 107 108
1125 & 1127 to 1161	101 102 103B 104 105 106 107 108
1162 to 1216	**101A** 102A 103A 104 **105A** 106A 107 108A
1217 to 1324	**101A** 102A 103A **104A** **105B** 106B 107A 108A
1325 to 1344	**101A** 102A 103A 104A 105B 106B 107A 108B
1345 up	**101B** 102A 103A 104A 105B 106B 107B 108B

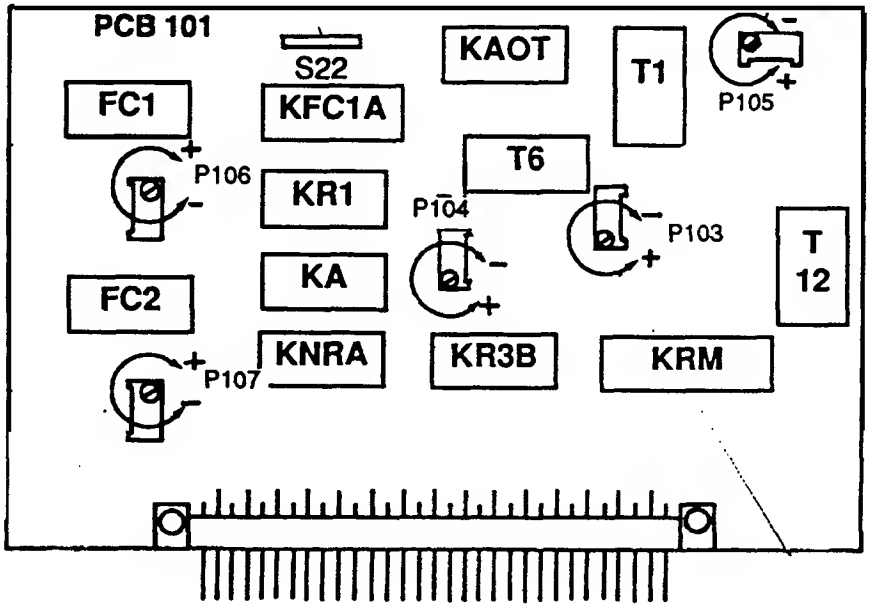
Table 2

Replace	With	
PCB 101	PCB **101M**	
PCB **101A**	PCB **101B**	
PCB 104	PCB 104A	
PCB 105A	PCB 105B	
PCB 106A	PCB 106B	(Modification M19 must be done)
PCB 107 and PCB 107A	PCB 107B	
PCB 108A	PCB 108B	

Table 3

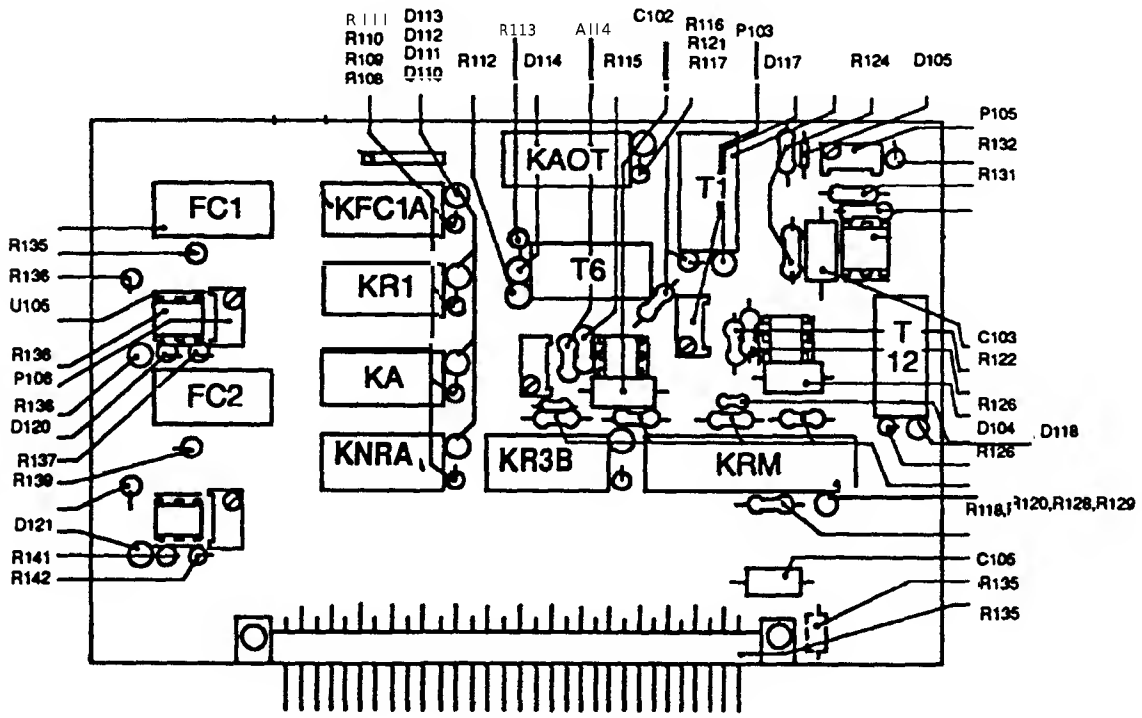
Serial number range	Latest configuration of **PCB'spossible**
1101 to 1124 & 1126	**101M** 102 103 104A 105 106 107B 108
1125 & 1127 to 1161	**101M** 102 103B 104A 105 106 107B 108
1162 and up	**101B** 102A 103A 104A 105B 106B 107B 108B

PCB 101
Assembly 30015801

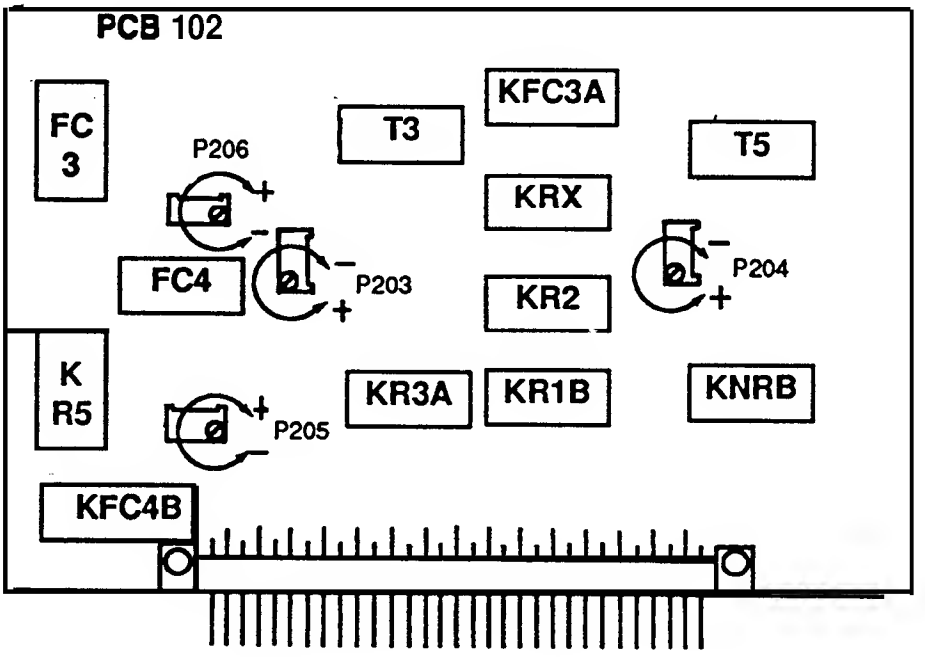


CIRCUIT POT TO INCREASE STANDARD VALUE FUNCTION				
T1	P103	Anti-clockwise	2.5 Secs	Time out to start CONVEYOR in reverse if CASSETTE is entered incorrectly.
T6	P104	Anti-clockwise	3 Secs	CONVEYOR MOTOR reverse time after CASSETTE has reached FC2 at end of cycle to eject CASSETTE.
T12	P105	Anti-clockwise	1 Sec	Delay after power-up to allow FC2 time to stabilize.
FC1	P106	Clockwise	5 Turns on	CASSETTE at ENDSTOP / FILM in CASSETTE.
FC2	P107	Clockwise	5 Turns on	CASSETTE entered.

PCB 101
Assembly 30015801

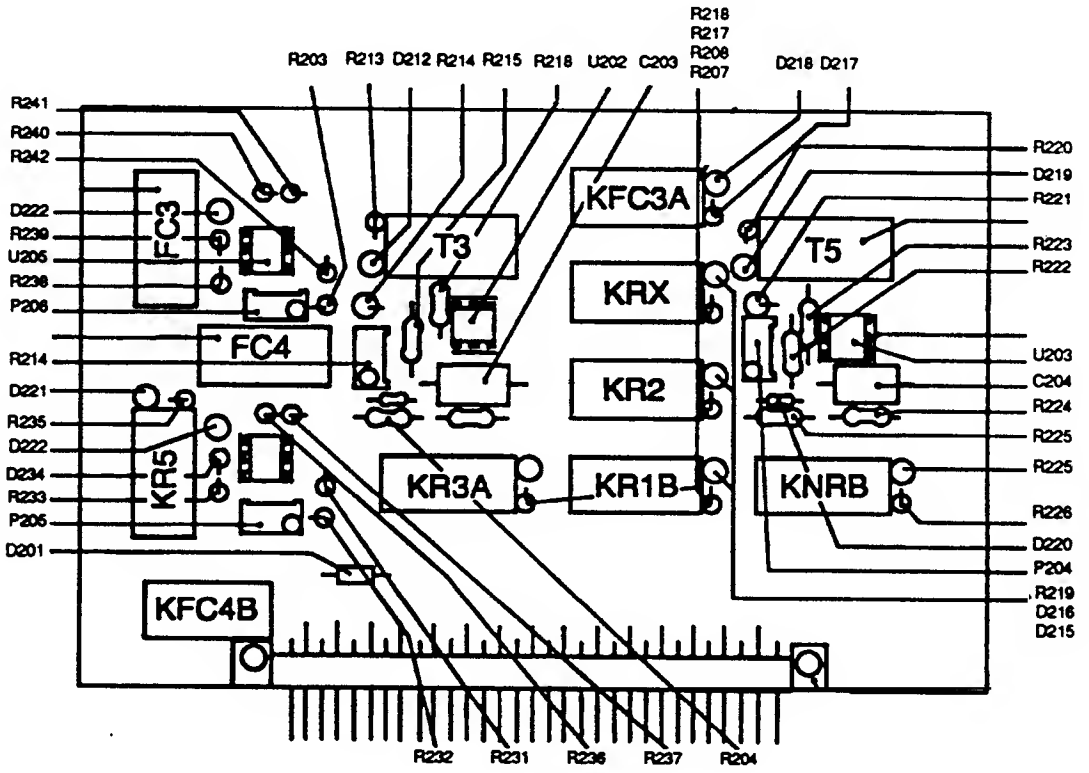


PCB 102
Assembly 30015802



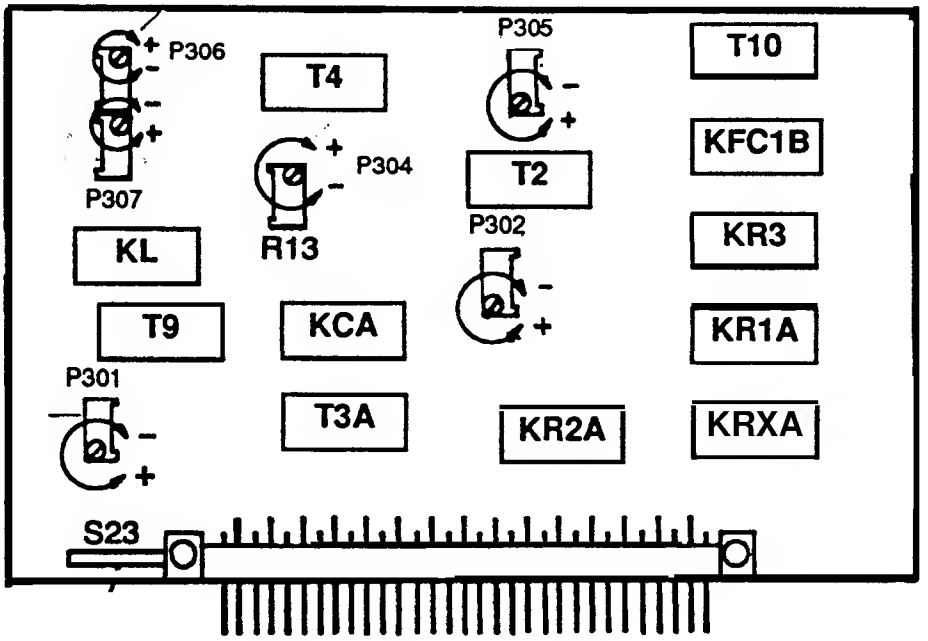
CIRCUIT	POT	TO INCREASE	STANDARD VALUE	FUNCTION
T3	P203	Anti-clockwise	8 Secs (S22 closed)	CAM pause for CASSETTE INJECTOR if FILM is stuck on upper SCREEN.
	The delay is adjustable up to approximately 20 secs to adjust the cycle time of the MINILOADER to suit the cycle time of the PROCESSOR being used. With S22 open this delay then occurs every cycle, but the INJECTOR only blows if a film is detected on the SCREEN by FC4.			
T5	P204	Anti-clockwise	1 Sec	Delays CONVEYOR reverse after "HOME POSITION' is reached to give the CASSETTE LID time to drop to prevent the LATCH catching on the SHOVEL.
FC3	P206	Clockwise	5 Turns on	CASSETTE opened.
FC4	P205	Clockwise	7 Turns on	FILM stuck to screen.

PCB 102
Assembly 30015802



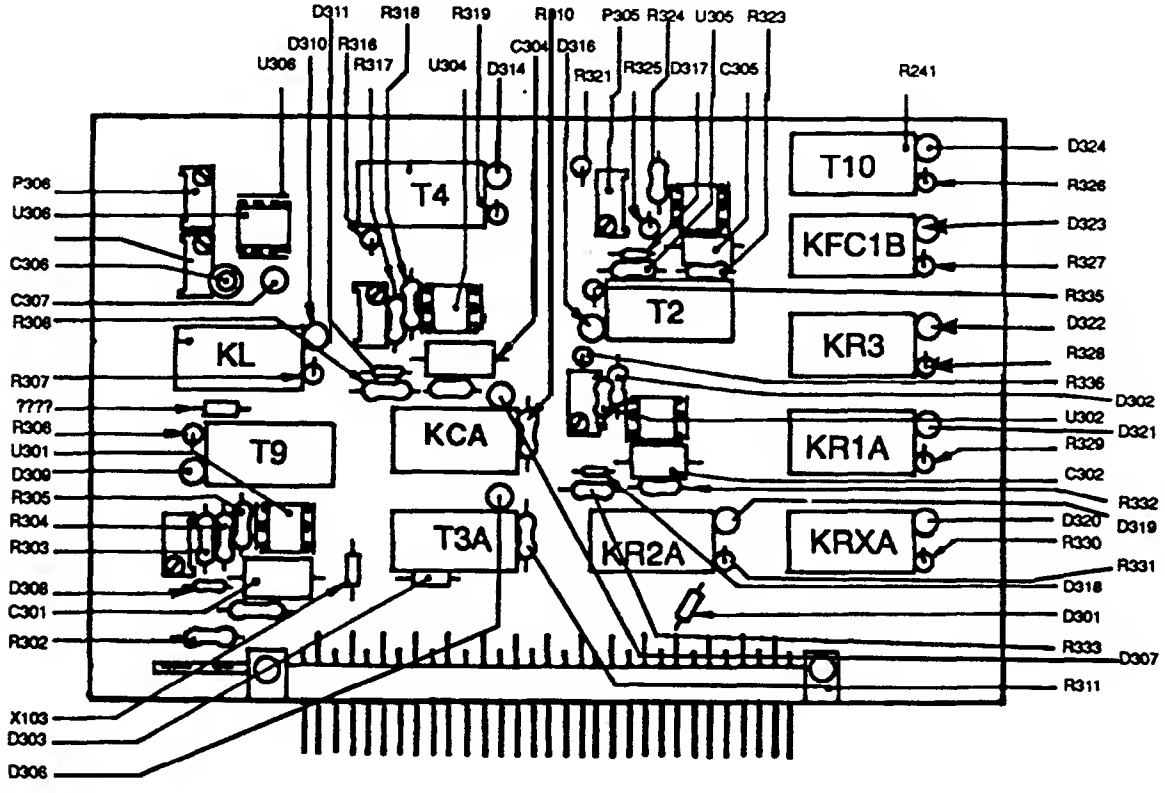
PCB 103
Assembly 30015803

Note: This board was fitted only to machines with Serial numbers 1124 and below and 1126 only



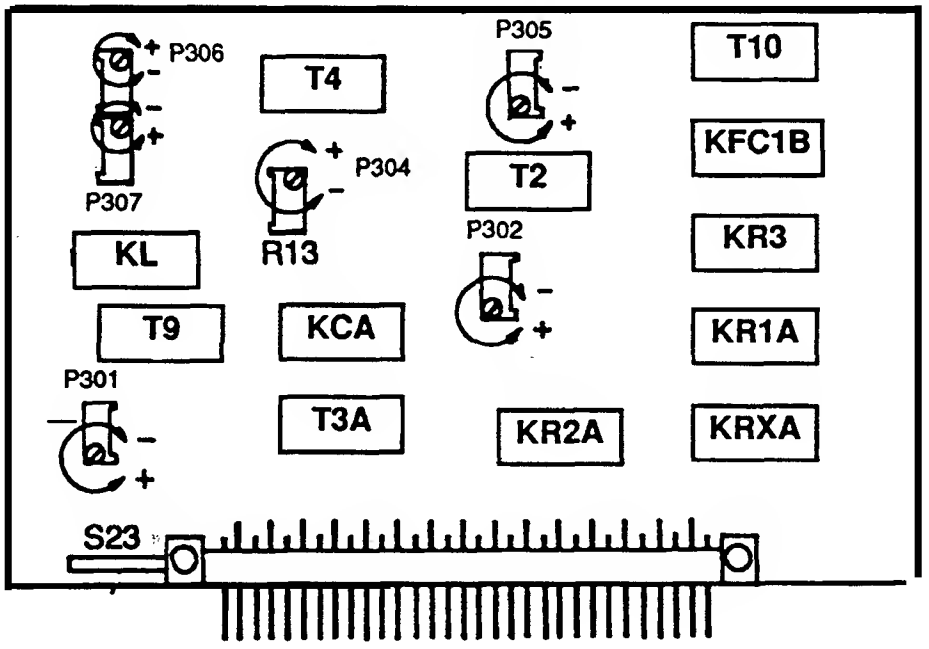
CIRCUIT	F'OT TO INCREASE	STANDARD VALUE	FUNCTION
T2	P302 Anti-clockwise	3 Sec	CAM pause for FILM pick up and TILT.
T4	P304 clockwise	1 Sec	Delay for FILM pick up before TILT MOTOR starts.
T9	P301 Anti-clockwise	10 Secs	Aborts the cycle if the CAM MOTOR has not been energized and more than the set time has elapsed. Disabled if S23 is open (for STEP BY STEP cycle).
T10	P305 Anti-do&wise	0 Sec	Delays CAM MOTOR starting after the CASSETTE arrives at END STOP (if needed).
TL	P306 Anti-clockwise	0.5 Sec	CASSETTE INJECTOR control. (TL controls the time of each
L	P307 Anti-clockwise	2.5 Sec	Individual blow and L controls the pause between them). NB:-The two potentiometers interact when adjustments are being made.

PCB 103
Assembly 30015803



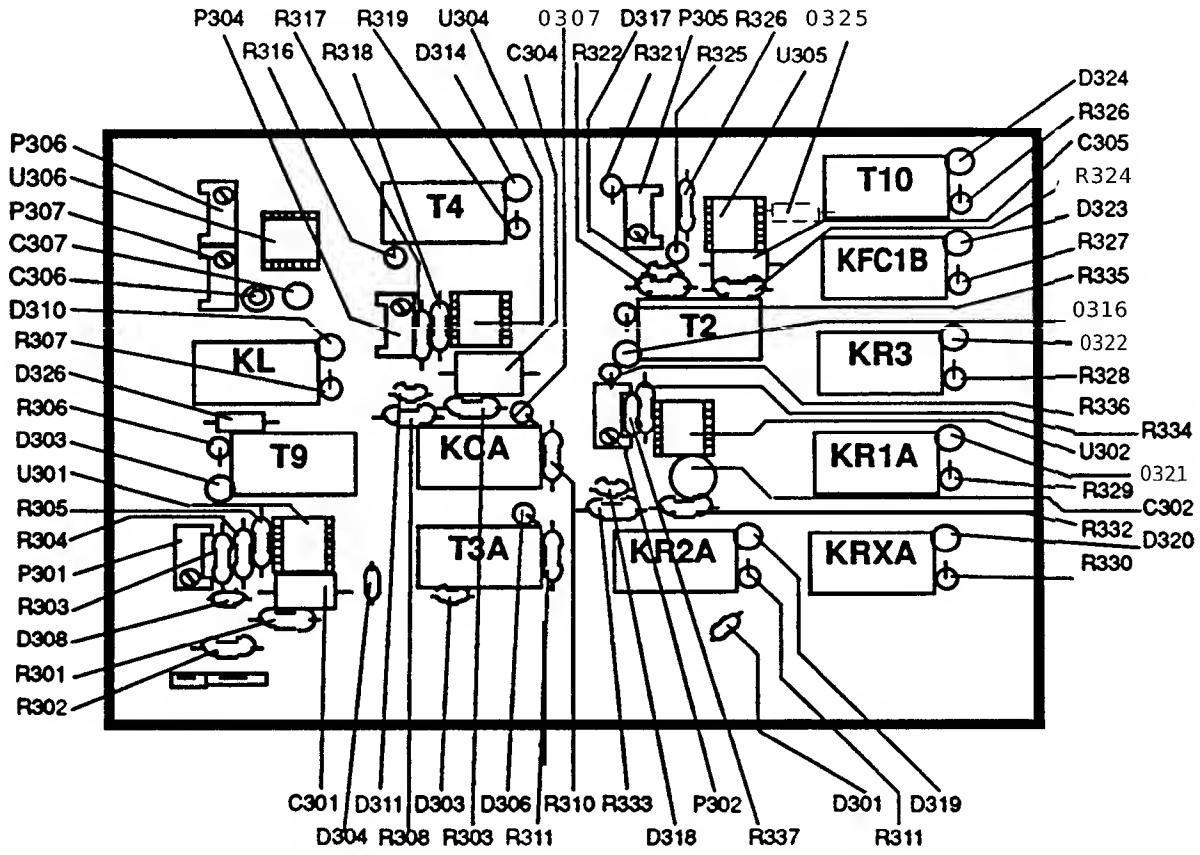
PCB 103B
Assembly 30015937

Note: This board was fitted oniy to machines with Serial numbers 1125 and 1127 to 1161.	This board has a number of differences:- 1 Timer T10 has a different function . 2 PCB 103B may be identified as PCB 103 on the board. For positive identification refer to *Infobits :"Printed Circuit Boards* 103 *and 103B".*

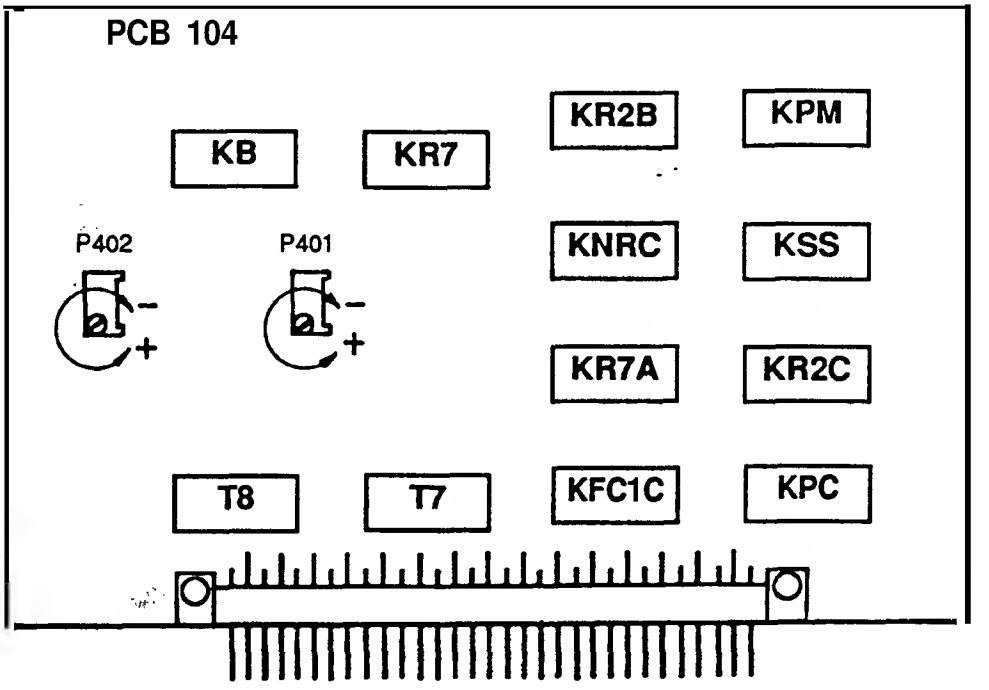


CIRCUIT	POT TO INCREASE	STANDARD VALUE	FUNCTION
T2	P302 Anti-clockwise	3 Secs	CAM pause for FILM pick up and TILT.
T4	P304 Clockwise	1 Sec	Delay for FILM pick up before TILT MOTOR starts.
T9	P301 Anti-clockwise	10 Secs	Aborts the cycle if the CAM MOTOR has not been energized and more than the set time has elapsed. Disabled if S23 is open (for STEP BY STEP cycle).
T10	P305 Anti-&&wise	1 Sec	When CAM MOTOR reverses after a "CASSETTE failed to open', ensures 'HOME POSITION' is reached after MS1 operates.
TL L	P306 Anti-do&wise P307 Anti-clockwise	0.5 Sec 2.5 Secs	CASSETTE INJECTOR control. (TL controls the time of each individual Mow and L controls the pause between them). *NB:-The two potentiometers interact when adjustments* are being made.

PCB 1038
Assembly 30015937

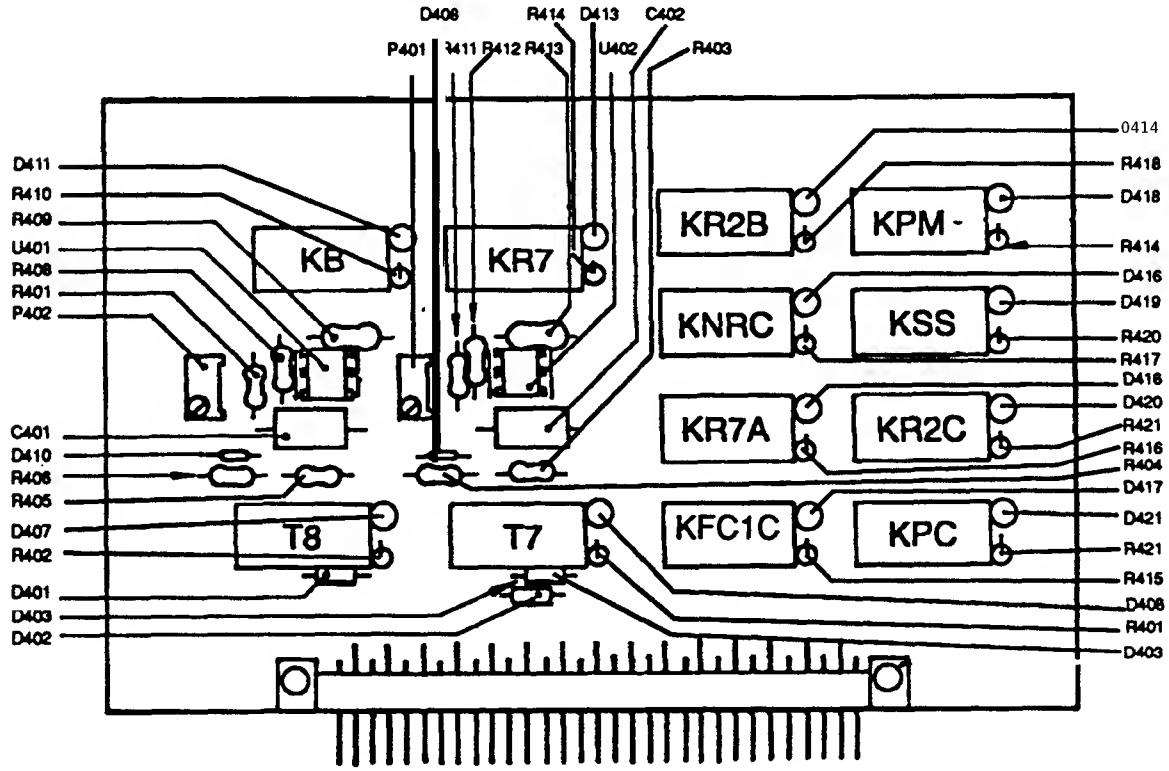


PCB 104
Assembly 30015804

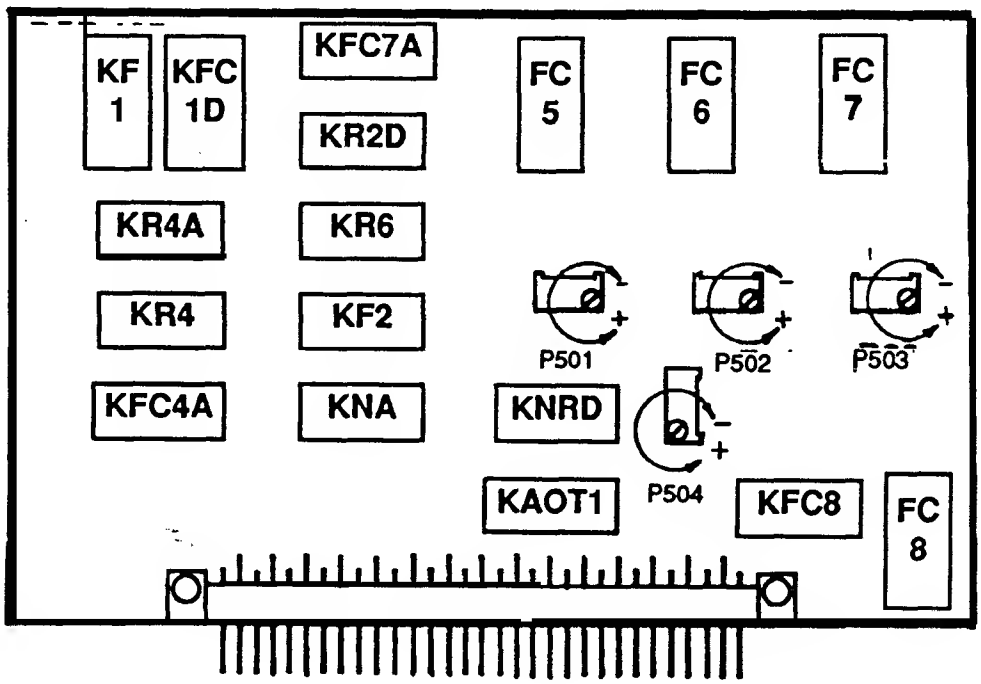


CIRCUIT	POT TO INCREASE	STANDARD VALUE	FUNCTION
T7	P401 Anti-clockwise	1 Sec	Opens SV1 and SV2 at start of cycle because the COMPRESSOR cannot start against a dosed system.
T8	P402 Anticlockwise	1 Sec	Cam pause to drop unexposed FILM back into the supply MAGAZINE if the FILM has not been removed from the CASSETTE.

PCB 104
Assembly 30015804

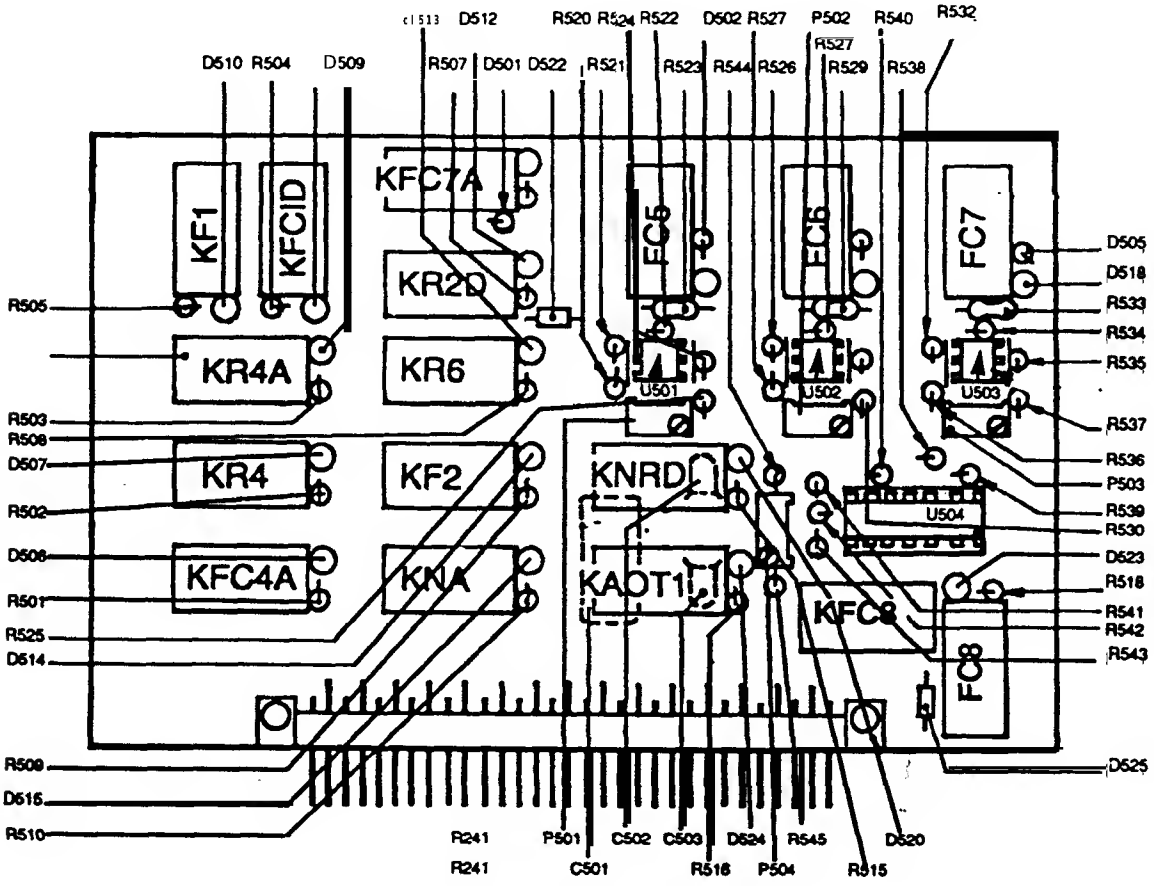


PCB 105
Assembly 30015805

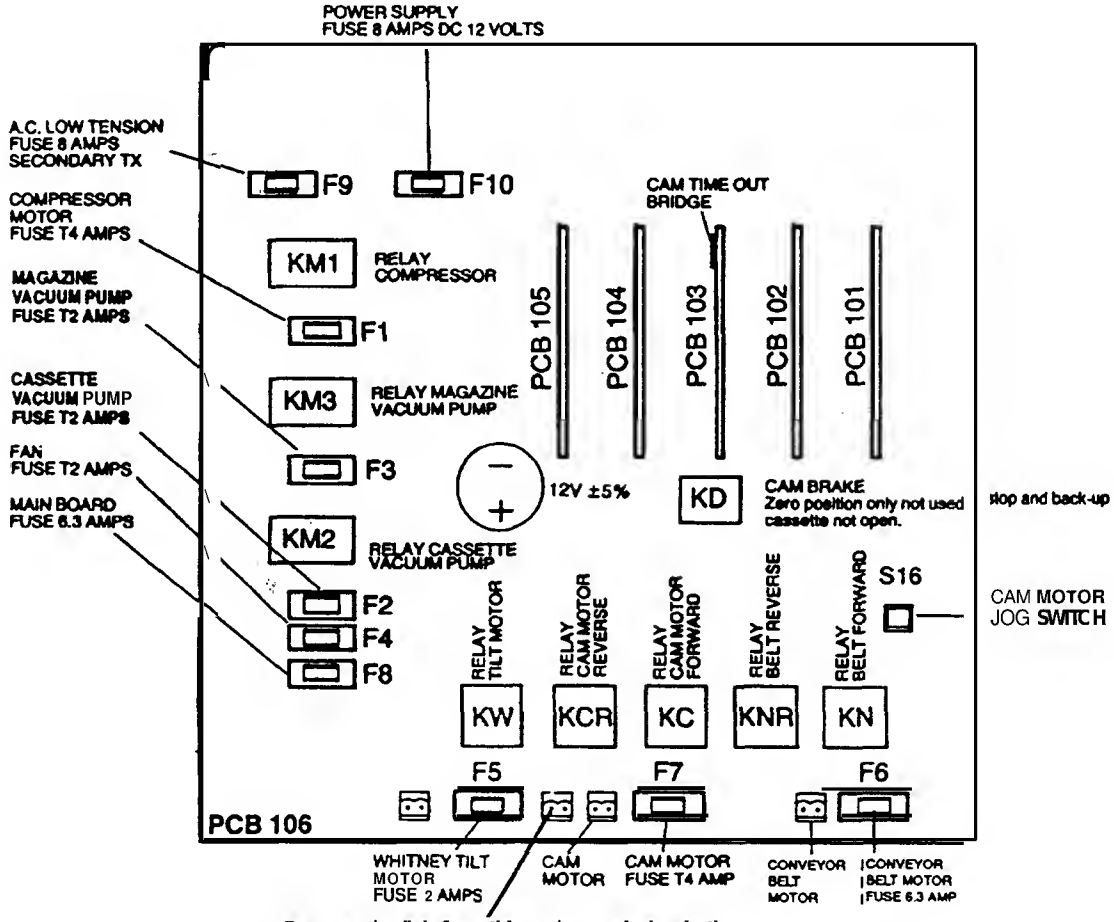


CIRCUIT	POT	TO INCREASE	STANDARD VALUE	FUNCTION
FC5	P501	Anti-clockwise	5 Turns on	SUPPLY MAGAZINE nearly empty.
FC6	P502	Anti-clockwise	5 Turns on	SUPPLY MAGAZINE empty.
FC7	P503	Anti-&&wise	5 Turns on	RECEIVING MAGAZINE full - STANDALONE version. FILM jammed in TUNNEL - PROCESSOR INTERFACE version.
FC8	P504	Clockwise	3 Turns on	MULTIPLE FILM DETECTOR bias control. See **procedure** on page SM 25.

PCB 105
Assembly30015805



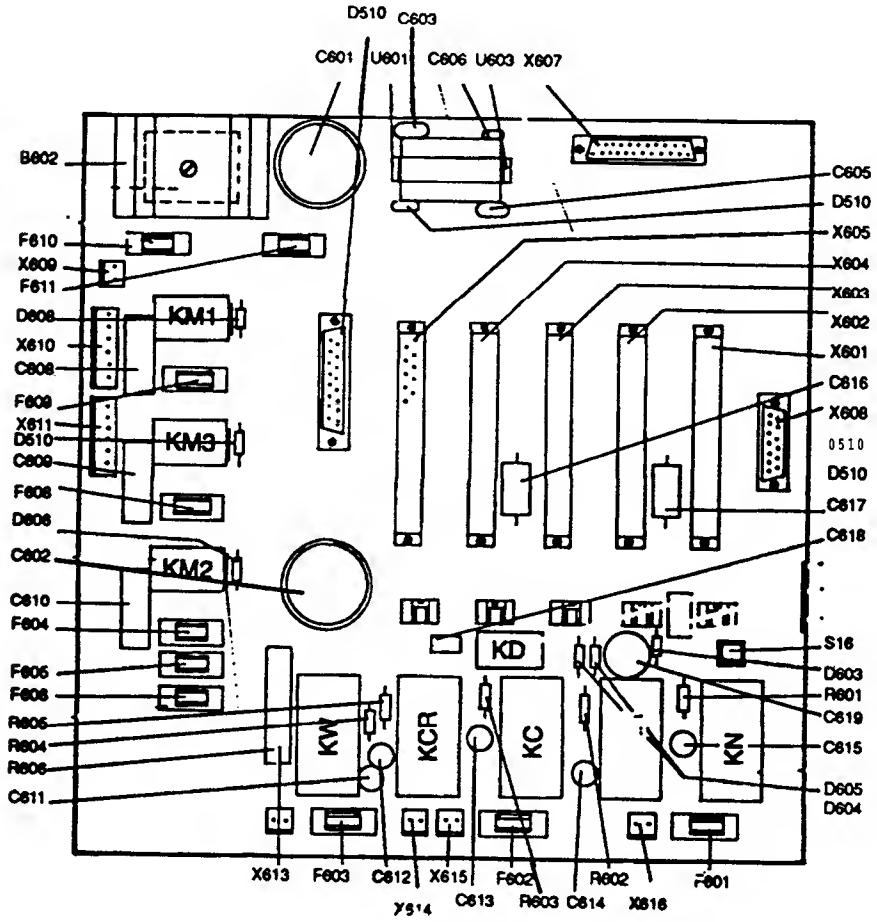
PCB 106
Assembly 30015806



Remove the link from this socket and plug in the step-by-steo switch.
Remove PCB 103/B and open S23 to **inhibit** TIMER **T9** (cam motor out).
Refit **the** PCB.
Enter **a** CASSETTE and **using** the **two** switches on the step-by-step switch you can halt the **Miniloader** at any point in the **cycle.**
After use **do** not **forget** to close **S23** on PCB

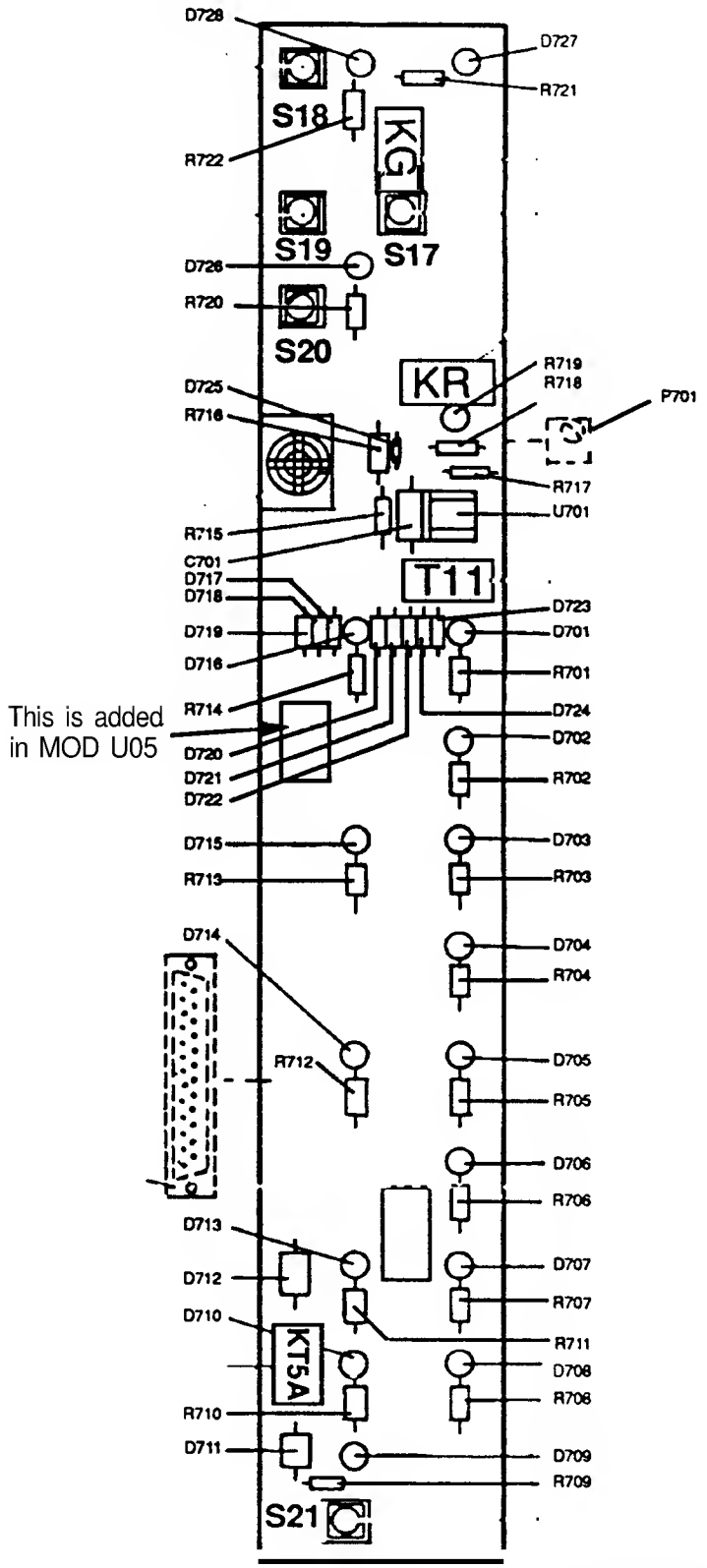
CIRCUIT POT TO INCREASE STANDARD VALUE FUNCTION
There are no TIMERS or PHOTOCELL circuits on PCB 106.

PCB 106
Assembly 30015806

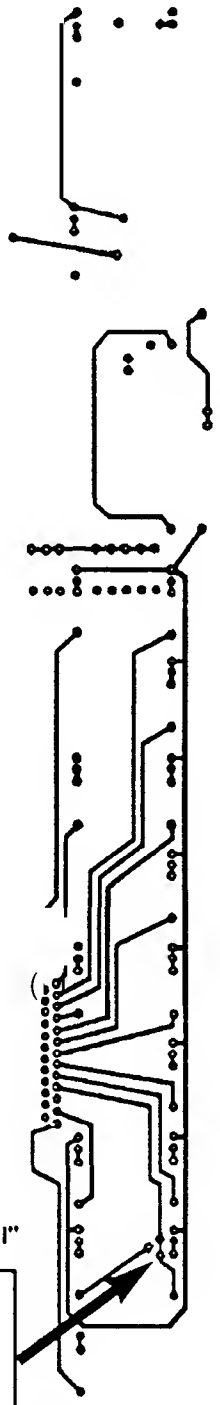


Note:
Relay KD is not needed on machines with serial No,s: 1125 and 1127 on.See modification notice 3 at the end of this section.

PCB 107
Assembly 30015807

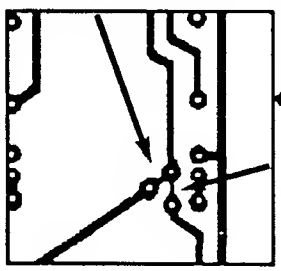


This is added in MOD U05



NOTE: These **connections** are factory installed on the original boards. They may need to be linked when fitting a replacement board.

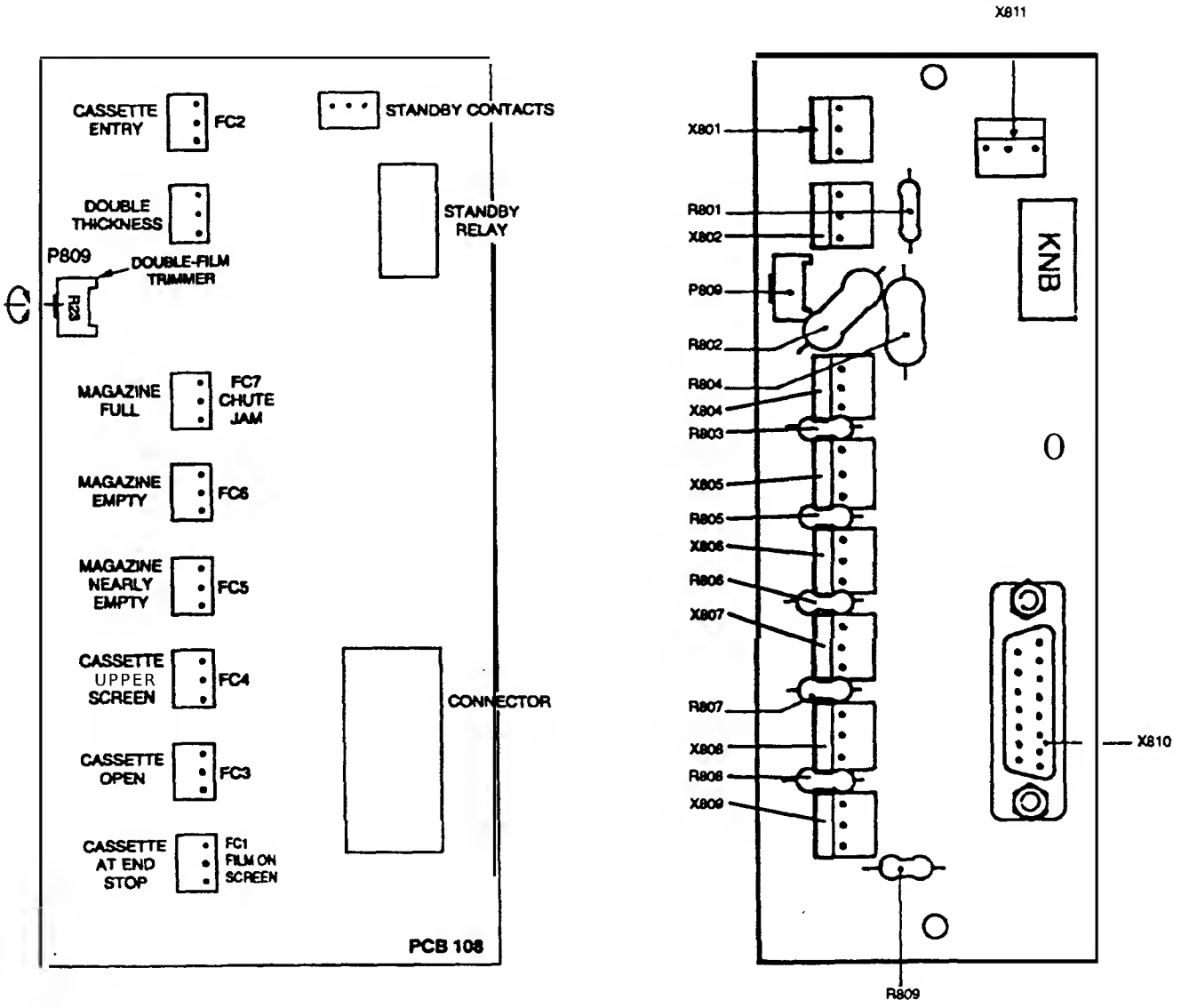
Link for "Magazine Full"



Link for Processor signal (Interface Version)

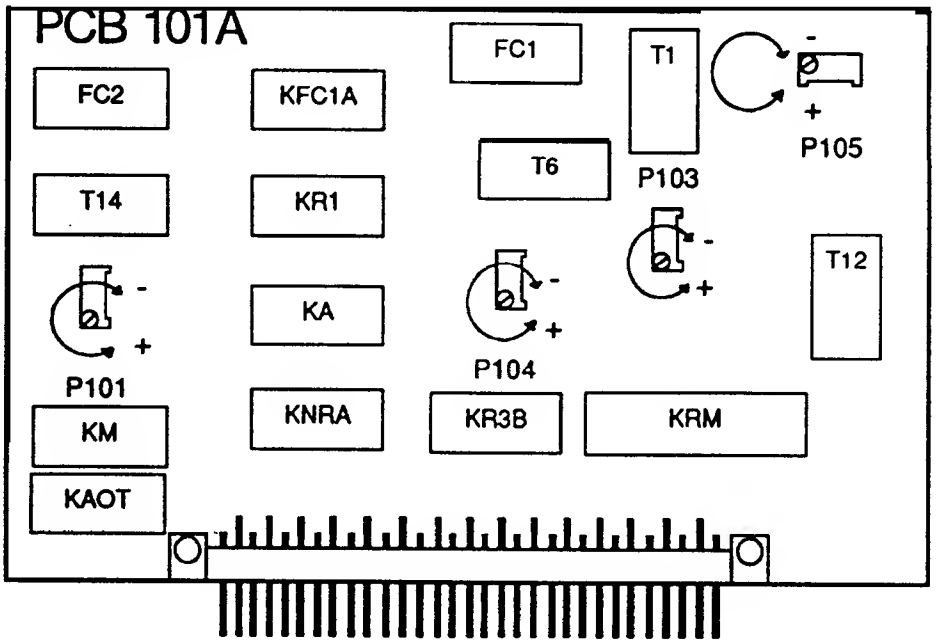
CIRCUIT	POT TO INCREASE	STANDARD VALUE	FUNCTION
T11	P701	Anti-clockwise 1 Sec	Buzzer on time.

PCB 108
Assembly 30015898



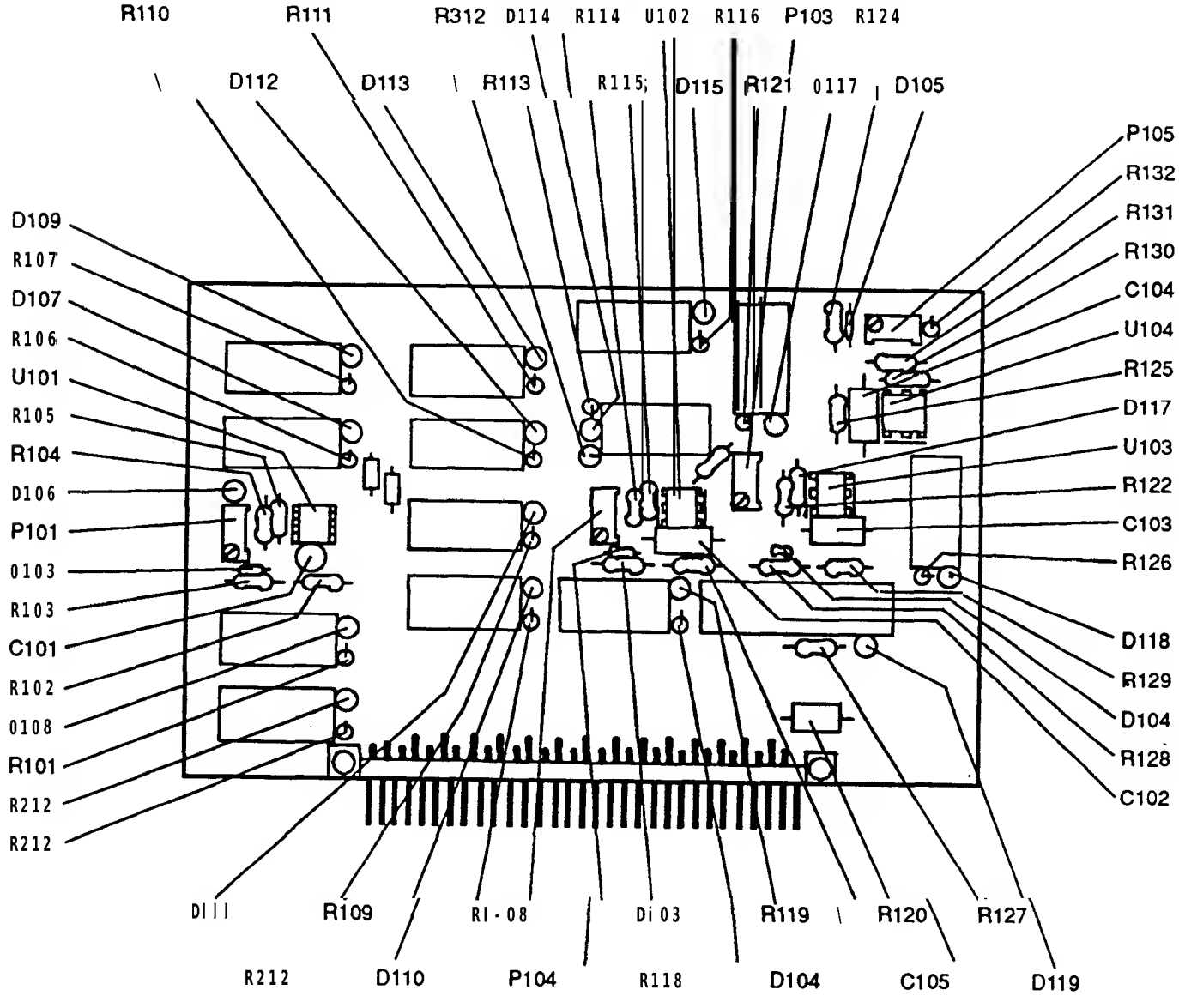
CIRCUIT	POT TO INCREASE	STANDARD VALUE	FUNCTION
FC8	P809 Clockwise	65 mA	MULTIPLE FILM DETECTOR emitter current control. See procedure on page SM 25.

PCB 101A
Assembly 30015925

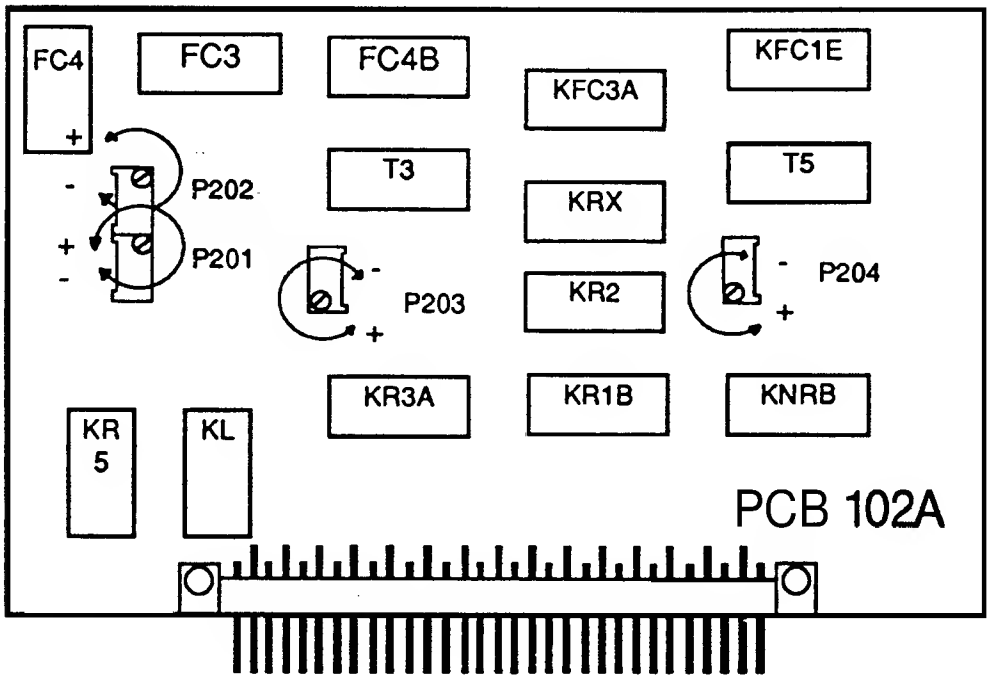


CIRCUIT	POT TO INCREASE	STANDARD VALUE	FUNCTION
T1	P103 Anti-clockwise	2.5 Secs	Time out to start CONVEYOR in reverse if the CASSETTE is entered incorrectly.
T6	P104 Anti-clockwise	3Secs	CONVEYOR MOTOR reverse time after CASSETTE has reached FC2 at end of cycle to eject CASSETTE.
T12	P105 Anti-clockwise	1 Sec	Delay after power-up to allow FC2 time to stabilize
T14	P 101 Anti-dcckwise	0 to 20 Secs	Adjust to suit cycle time of the PROCESSOR being used. Set to minimum for STAND ALONE version.

PCB 101A
Assembly 30015925

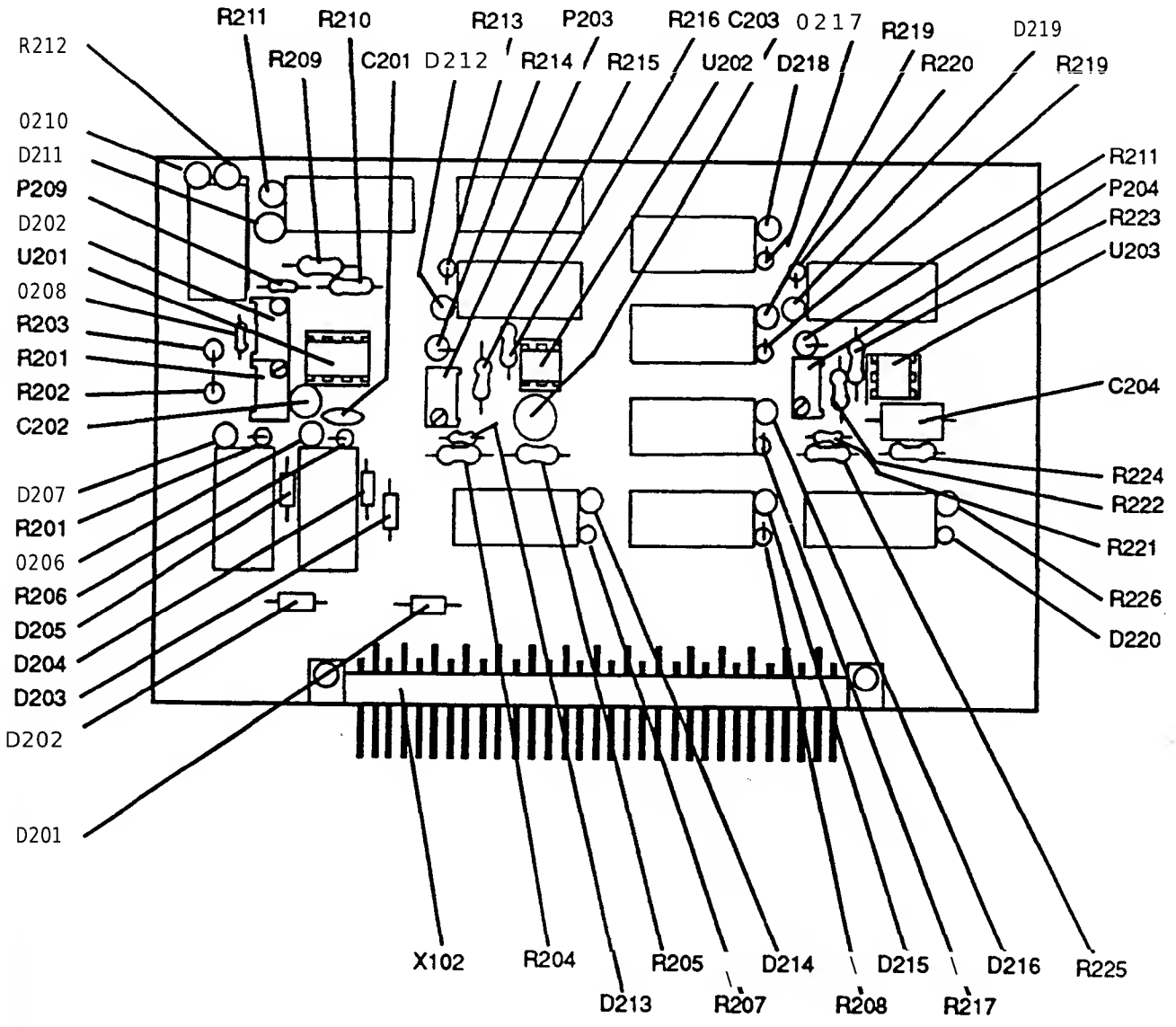


PCB 102A
Assembly 30015926

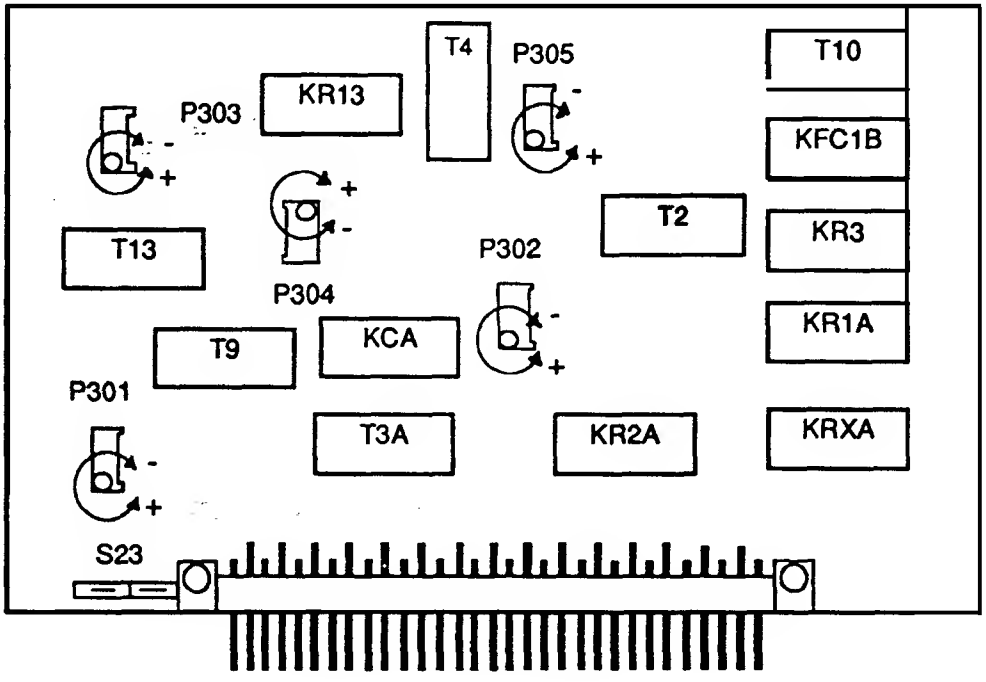


CIRCUIT	POT TO INCREASE	STANDARD VALUE	FUNCTION
T3	P203 Anti-clockwise	8 Secs	CAM pause for CASSETTE INJECTOR if FILM is stuck on upper SCREEN.
T5	P204 Anti-clockwise	1 Sec	Delays CONVEYOR reverse after 'HOME POSITION' is reached to give the CASSETTE LID time to drop to prevent the LATCH catching on the SHOVEL.
TL & L	P202 Anti-clockwise P201 Anti-clockwise	0.5 Sec 2.5 Secs	CASSETTE INJECTOR control. (TL controls the time of each individual blow and L controls the pause between them). NB:- The two POTENTIOMETERS interact when adjustments are being made.

PCB 102A
Assembly 30015926

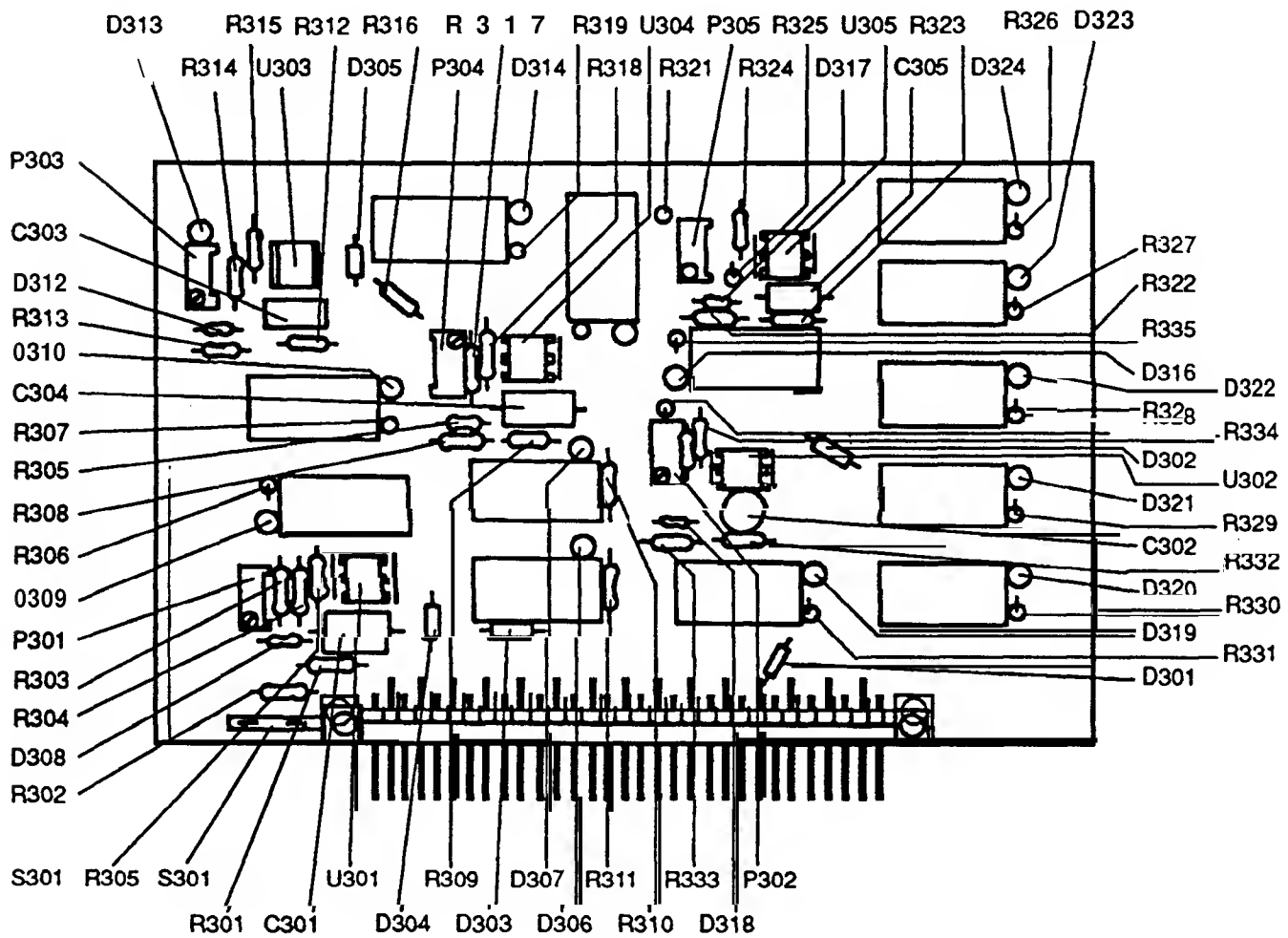


PCB 103A
Assembly 30015927

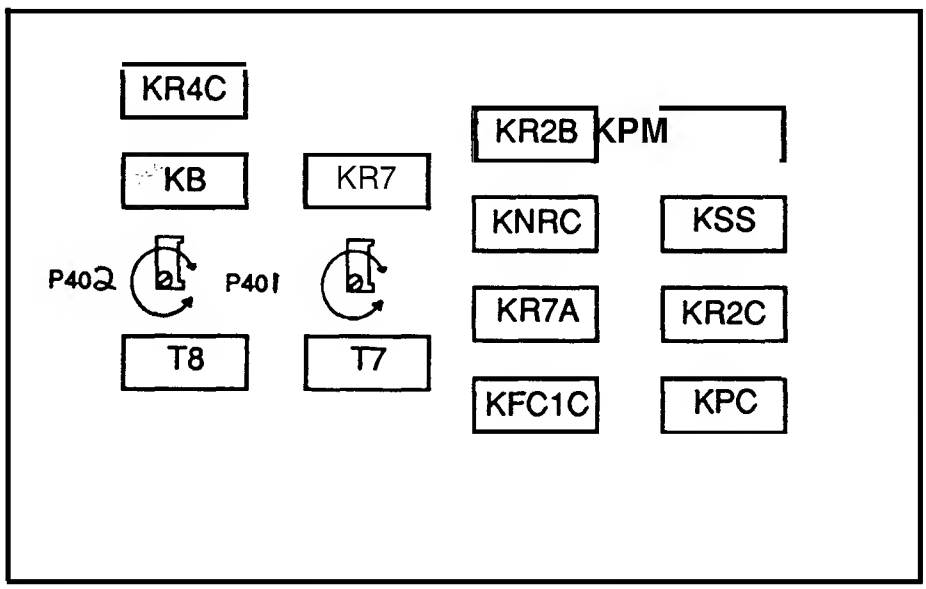


CIRCUIT	POT TO INCREASE	STANDARD VALUE	FUNCTION
T2	P302 Anti-clockwise	3 Secs	CAM pause for FILM pick up and TILT.
T4	P304 Clockwise	1 Sec	Delay for FILM pick up before TILT MOTOR starts.
T9	P301 Anti-clockwise	10 Secs	Aborts the cycle if the CAM MOTOR has not been energized and more than the set time has elapsed. Disabled if S23 is open (for STEP BY STEP cycle).
T10	P305 Anti&&wise	1 Sec	When CAM MOTOR reverses after a "CASSETTE failed to open', ensures 'HOME POSITION' is reached after MS1 operates.
T13	P303 Anti-clockwise	2 Secs	CAM pause to operate CASSETTE INJECTOR in every cycle with the CASSETTE LID open one centimetre.

PCB 103A
Assembly 30015927

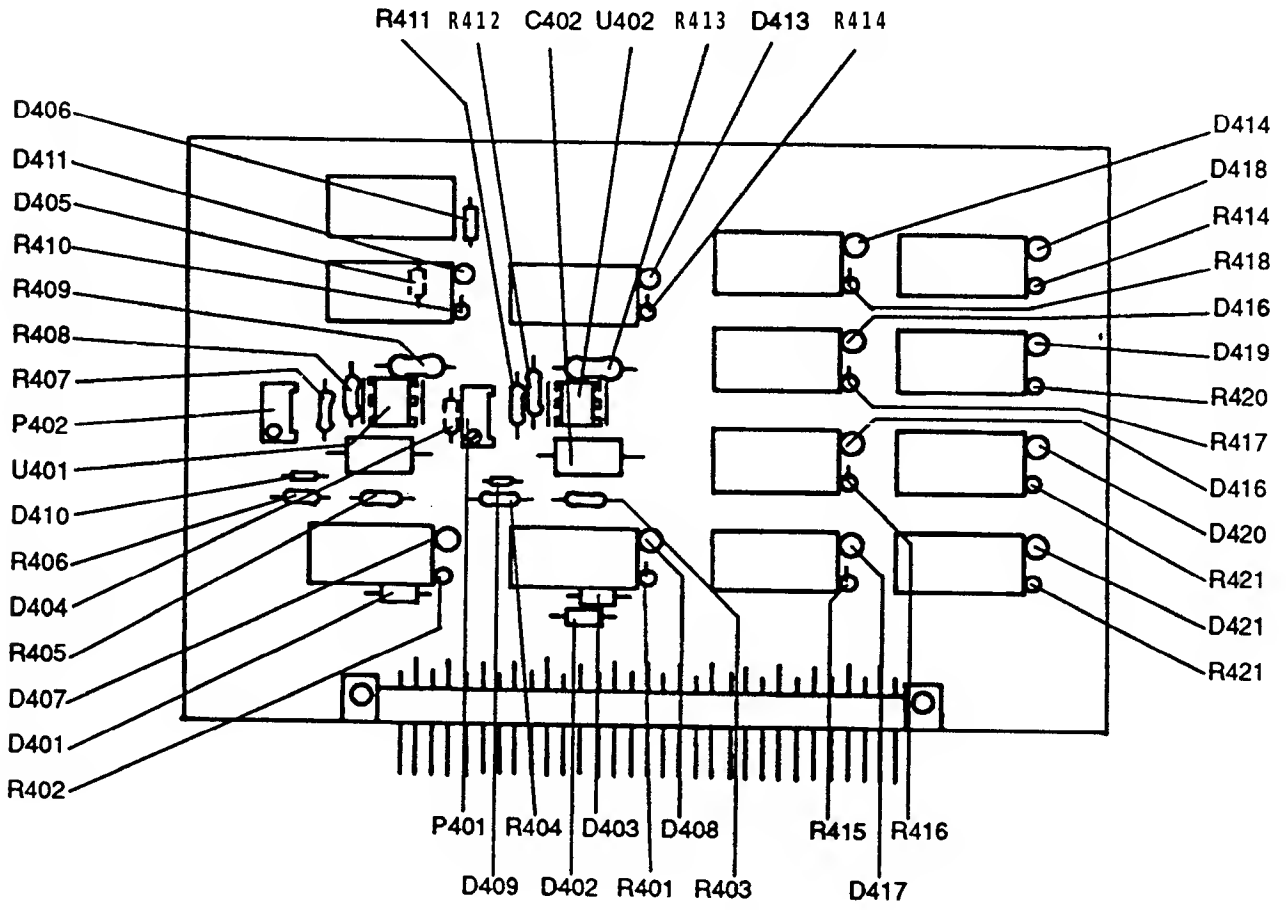


PCB 104A
Assembly 30015949

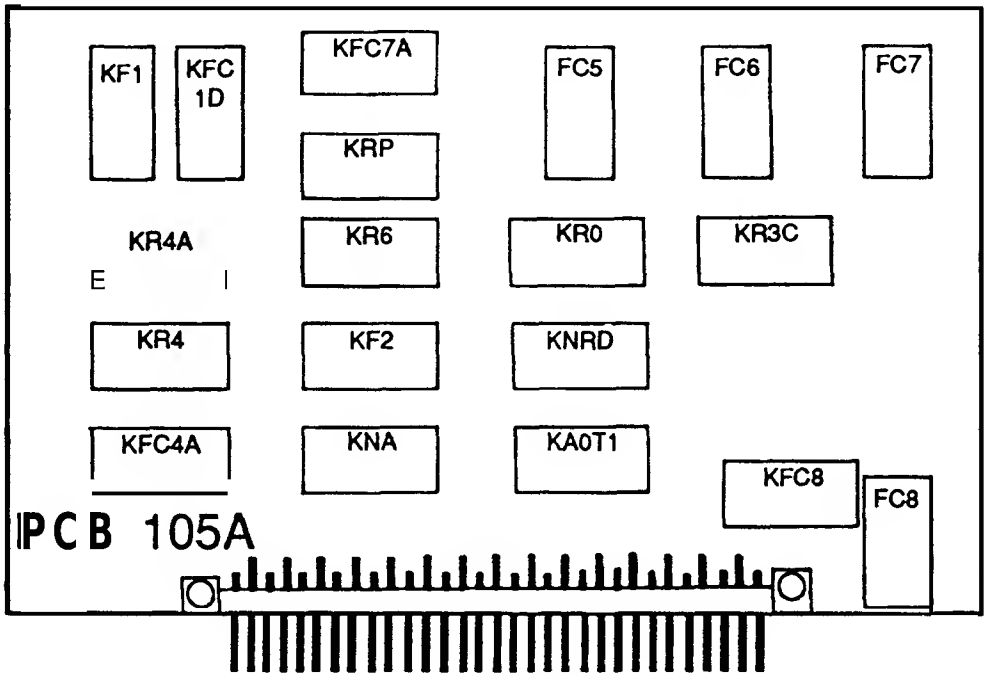


CIRCUIT	POT TO INCREASE	STANDARD VALUE	FUNCTION
T7	P401 Anti-clockwise	1 Sec	Opens SV1 and SV2 at start of cycle because the COMPRESSOR cannot start against a dosed system.
T8	P402 Anti-clockwise	1 Sec	Cam pause to drop unexposed FILM back into the supply MAGAZINE if the FILM has not been removed from the CASSETTE.

PCB 104A
Assembly 30015949

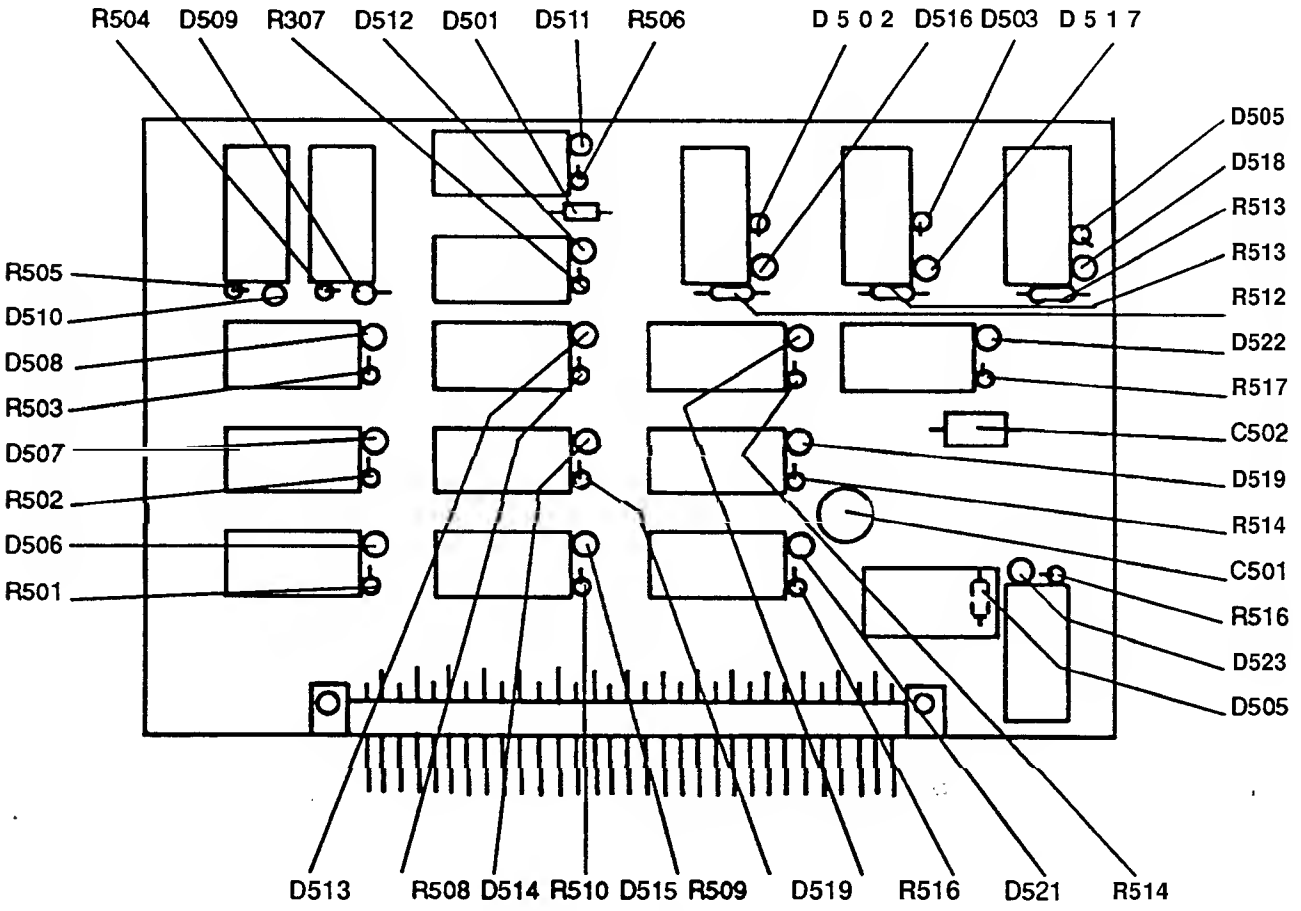


PCB 105A
Assembly 30015929

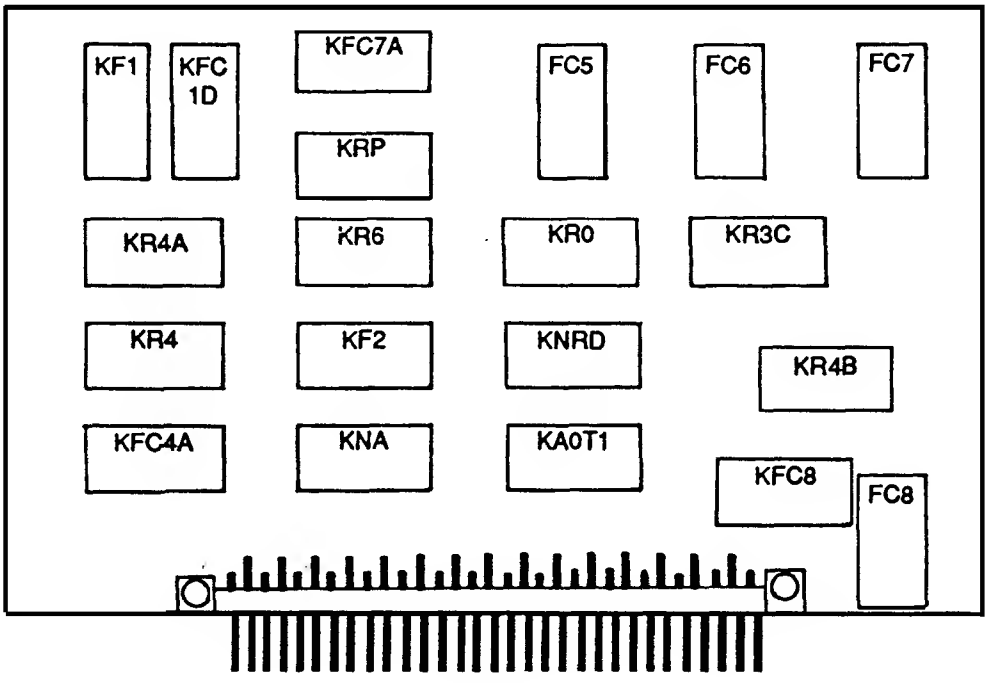


CIRCUIT POT TO INCREASE	STANDARD VALUE	FUNCTION
THERE ARE NO TIMERS OR PHOTOCELLS ON PCB105A.		

PCB 105A
Assembly 30015929

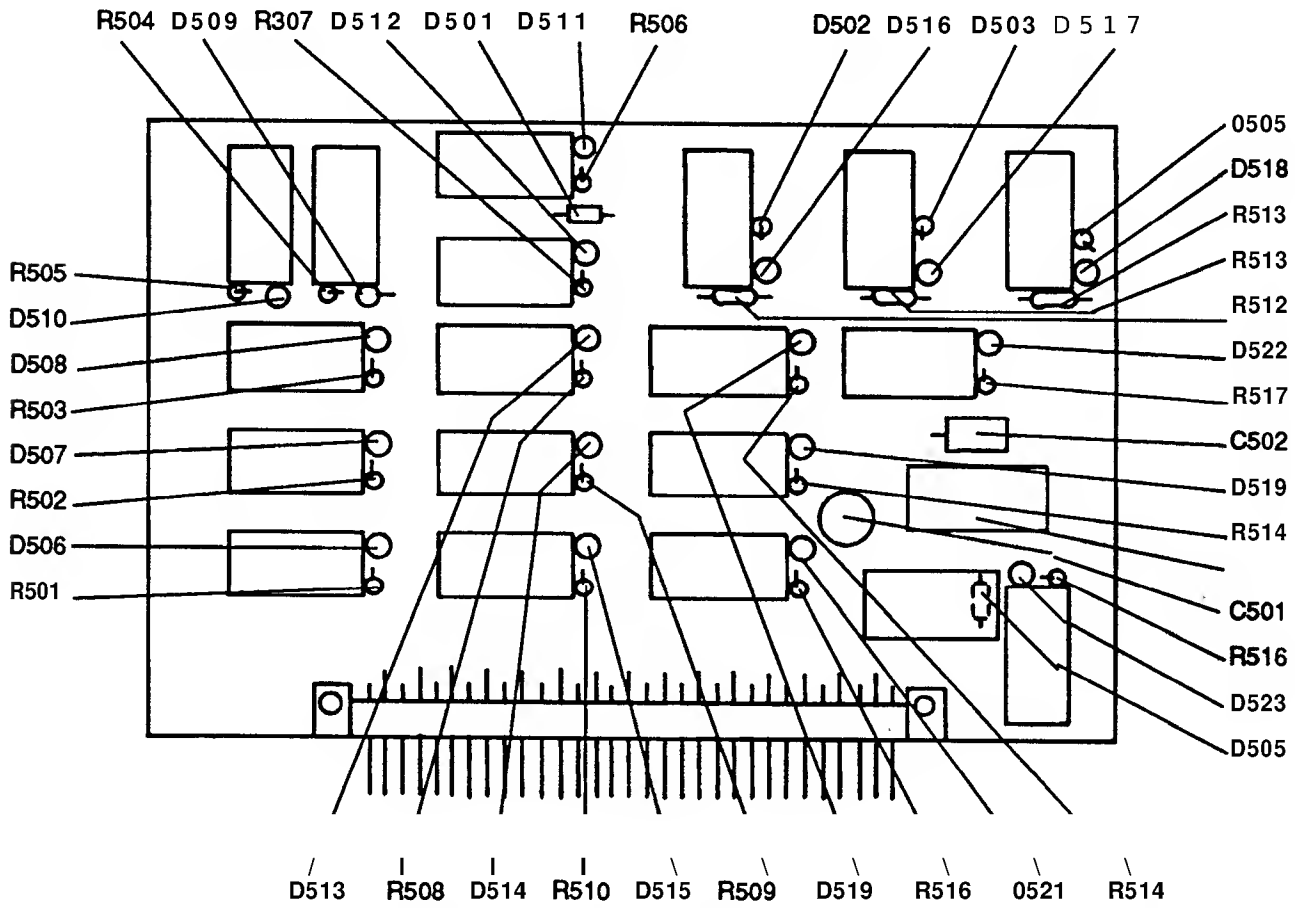


PCB 105B
Assembly 30015948

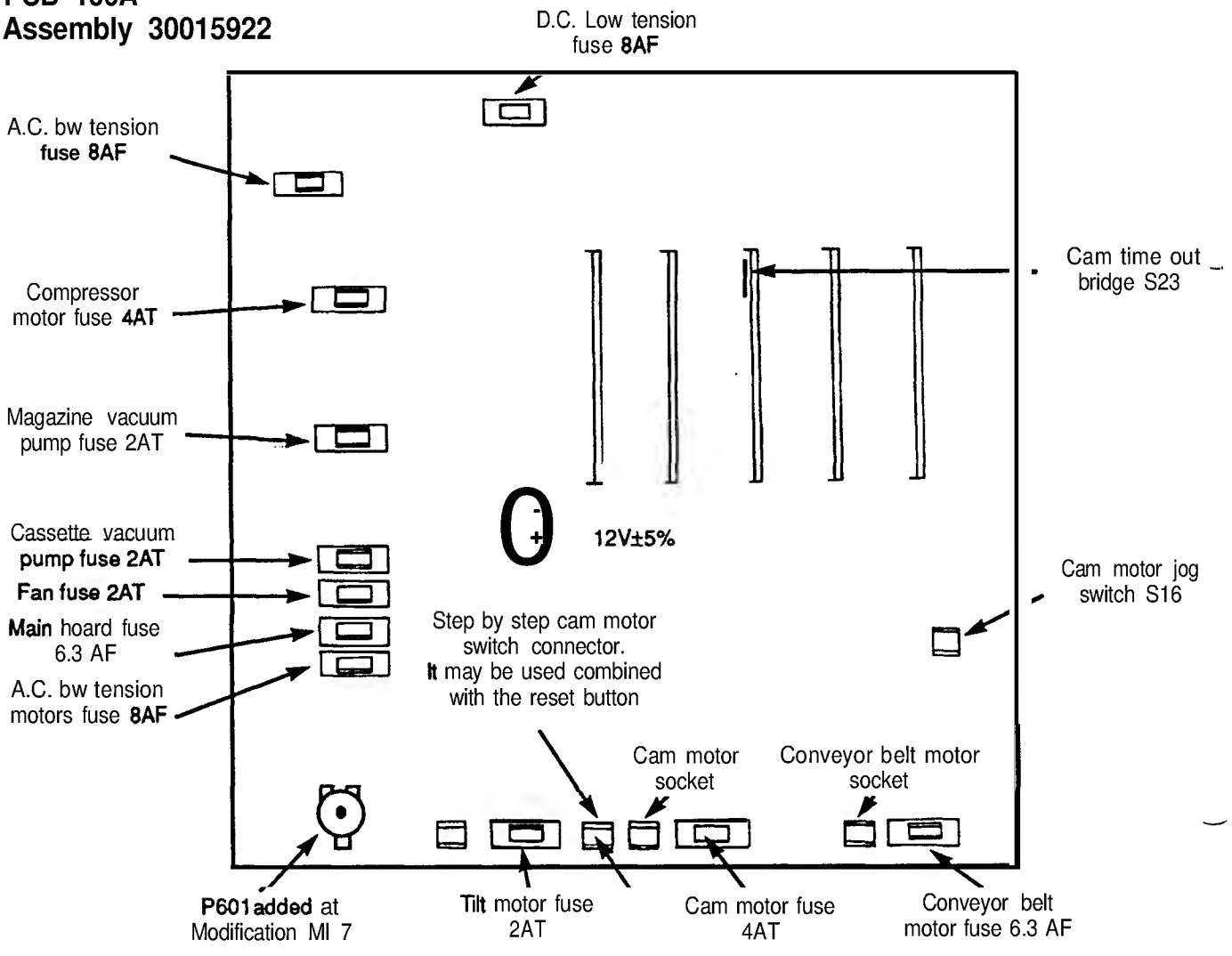


CIRCUIT POT TO INCREASE	STANDARD VALUE	FUNCTION
THERE ARE NO TIMERS OR PHOTOCELLS ON PCB 105B.		

PCB 105B
Assembly 30015948



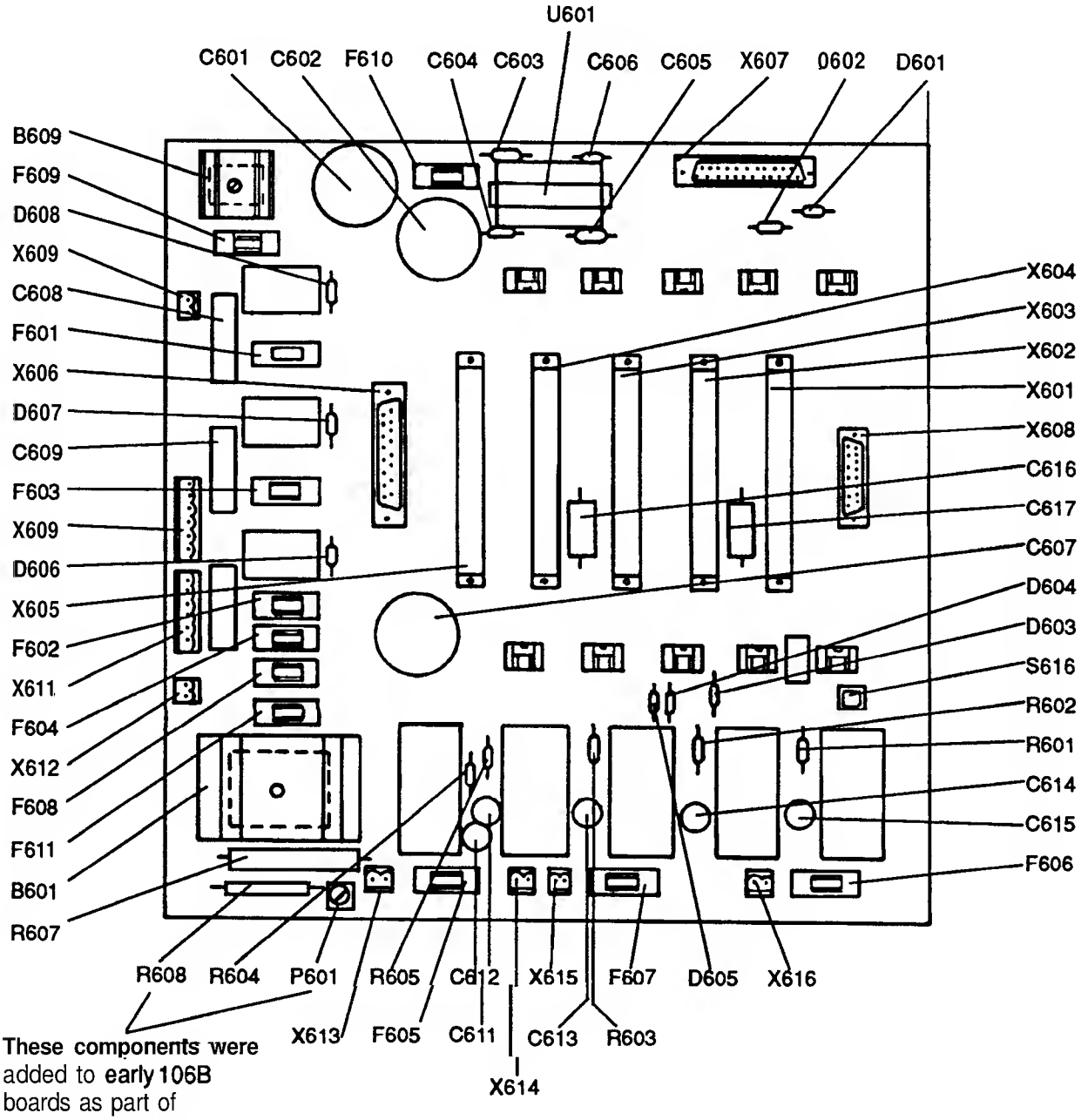
PCB 106A
Assembly 30015922



Remove the Link from this socket and plug in the step-by-step switch.
Remove PCB **103A** and open S23 to inhibit TIMER **T9** (cam motor time-out).
Refit the PCB.
Enter a CASSETTE and using the two switches on the step-by-step switch you can halt the Minibader at any point in the cycle.
After use do not forget to **close** S23 on PCB **103A.**

CIRCUIT **POT TO INCREASE**	**STANDARD VALUE**	**FUNCTION**
THE POTENTIOMETER P 601 controls the speed of the TILT MOTOR to prevent it running on **and** cycling. The correct **setting is obtained when the TILT MOTOR runs at a reasonable speed but does not cycle. A start setting is fully clockwise and back 30 degrees. This potentiometer was** added in **modification M 17.**		

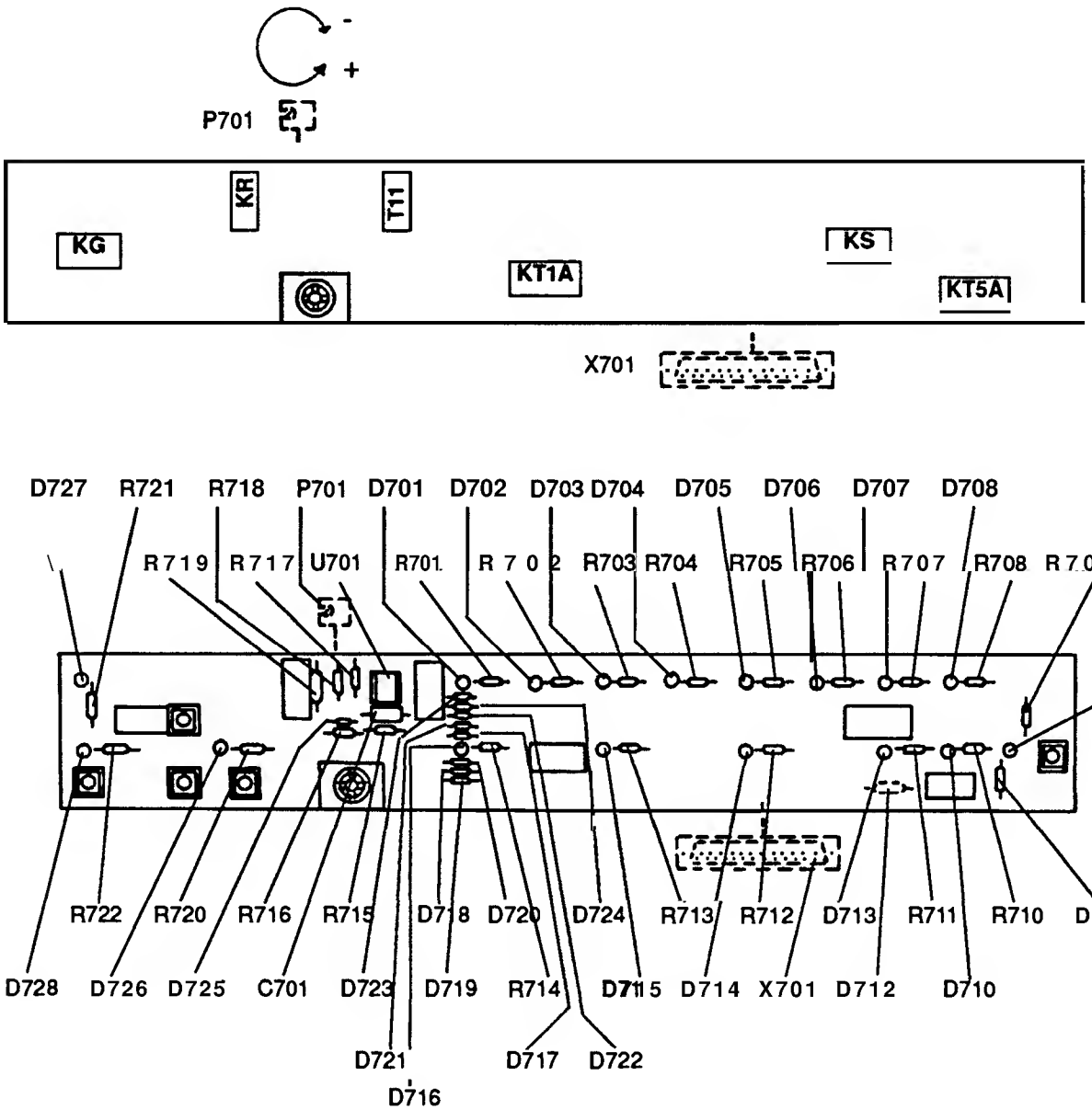
PCB 106B
Assembly 30015946



These components were added to early 106B boards as part of modification MI7

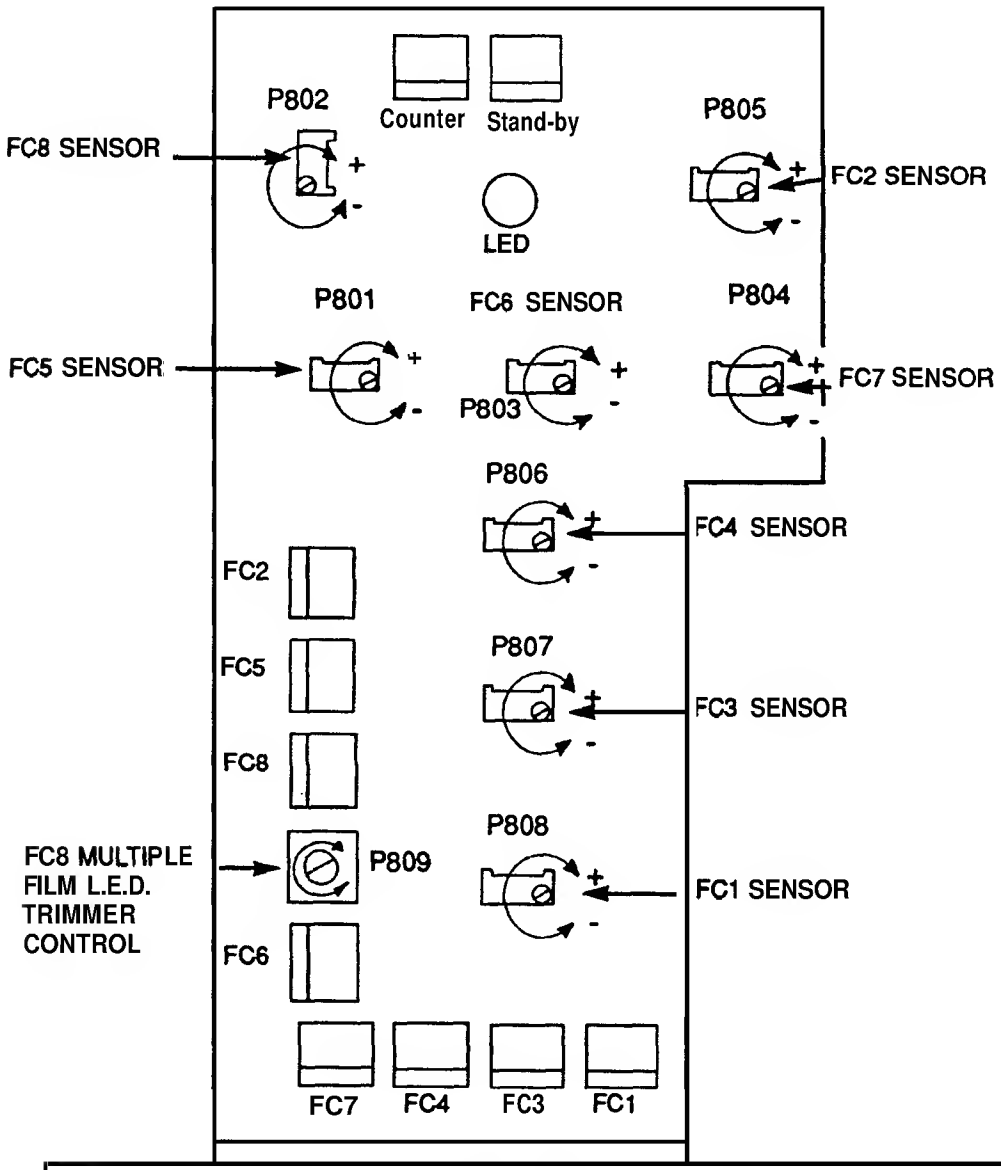
CIRCUIT POT TO INCREASE	STANDARD VALUE	FUNCTION
THE POTENTIOMETER P 601 controls the speed of the TILT MOTOR to prevent it running on and cycling. The correct setting is obtained when the TILT MOTOR runs at a reasonable speed but does not cycle. A start setting is fully clockwise and back 30 degrees. On MINILODERS with serial number below 1239 this POTENTIOMETER was added in modification M 17.		

PCB 107A
Assembly 30015947



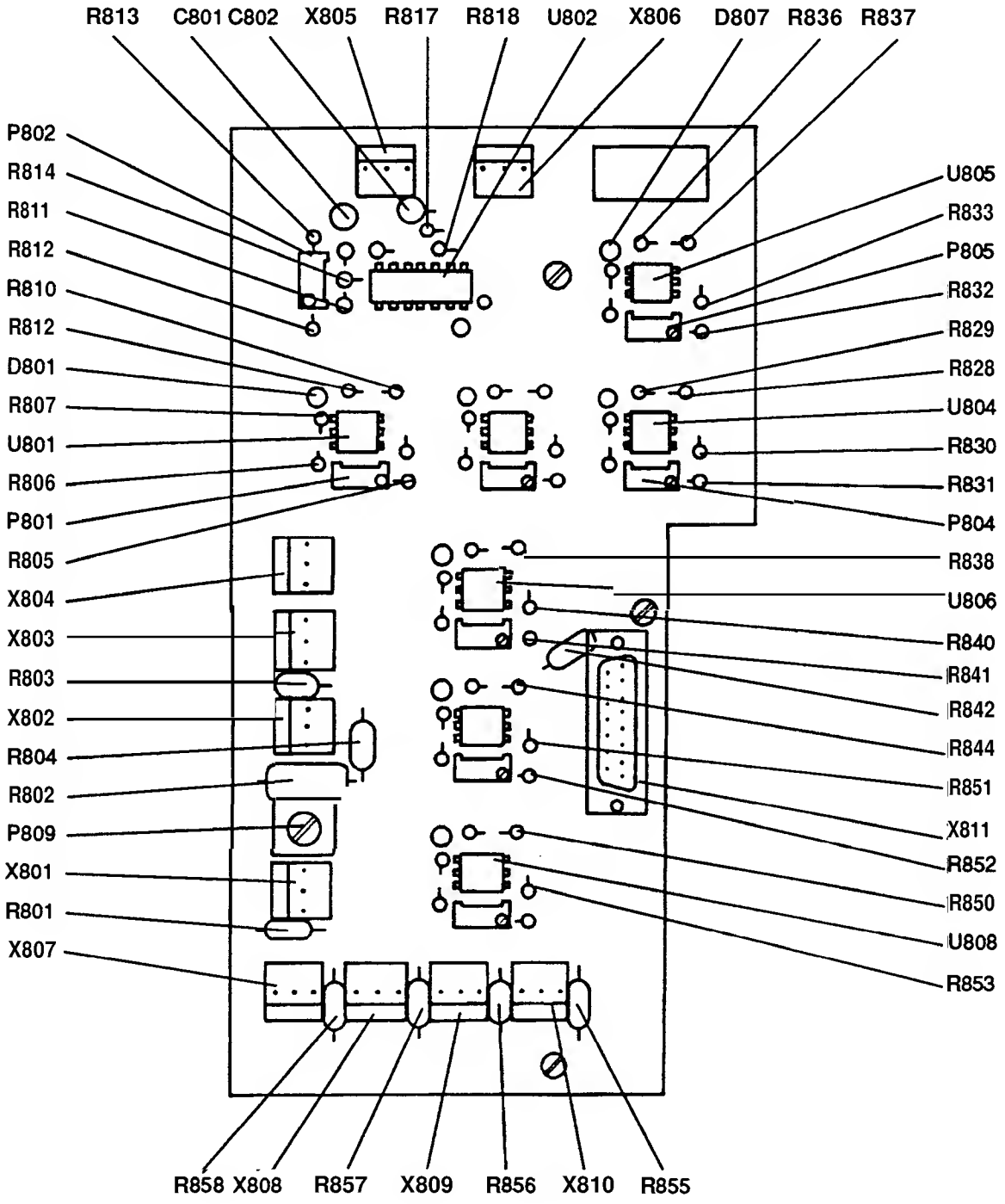
CIRCUIT	POT TO INCREASE	STANDARD VALUE	FUNCTION
TII	P701	Anti-dodwise 1 Sec	Buzzer on time.

PCB 108A
Assembly 30015898



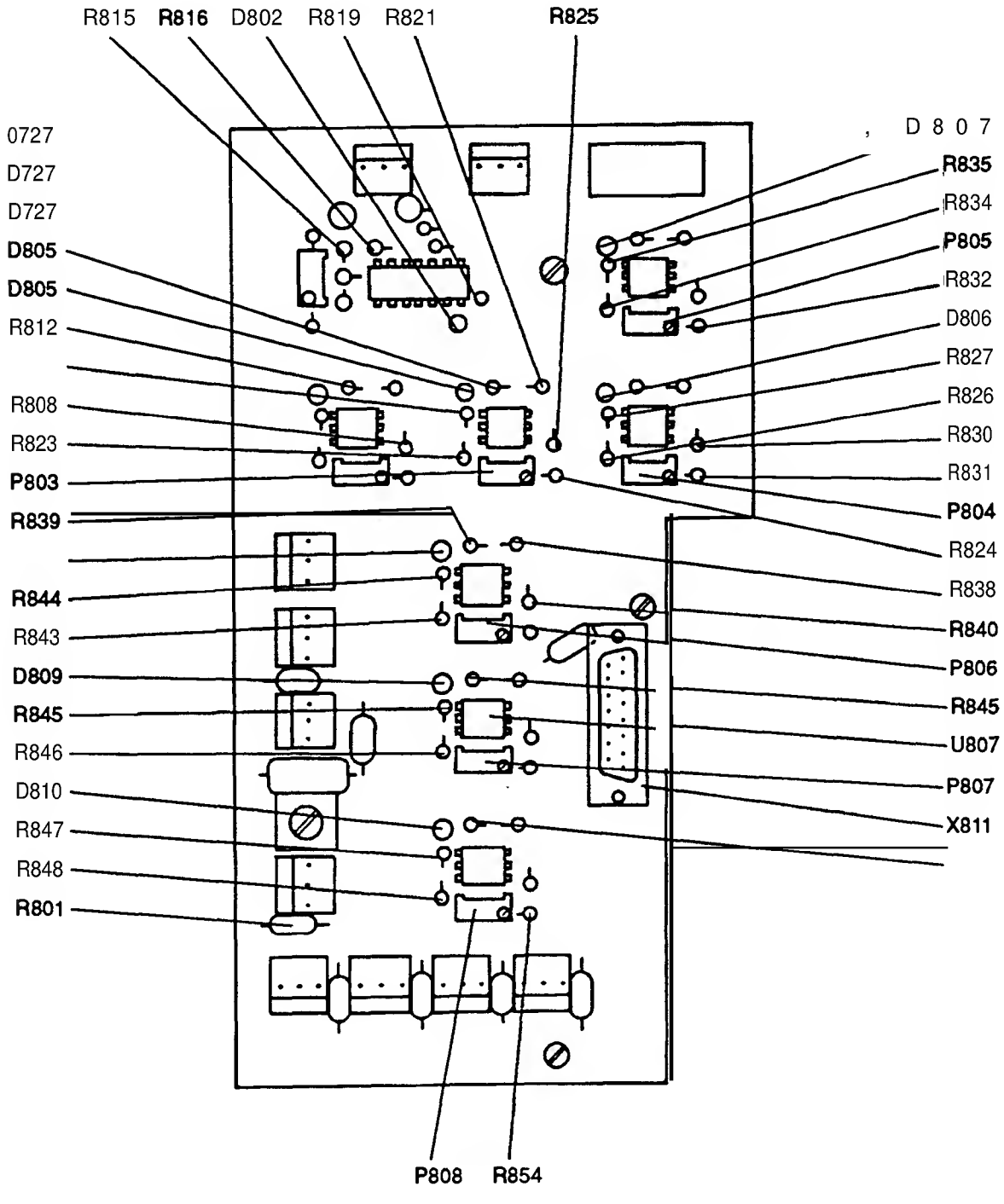
CIRCUIT	POT	STANDARD VALUE	TO INCREASE	FUNCTION
FC1	**P808**	5Tumson	**Clockwise**	**CASSETTE** at **ENDSTOP/** FILM in CASSETTE.
FC2	**P805**	5Tumson	Clockwise	**CASSETTE entered.**
FC3	**P807**	**5 Turns on**	Clockwise	**CASSETTE opened.**
FC4	**P806**	7Tumson	Clockwise	FILM stuck to SCREEN.
FC5	**P801**	**5 Turns on**	**Clockwise**	SUPPLY MAGAZINE nearly empty.
FC6	**P803**	5Tumson	**Clockwise**	**SUPPLY** MAGAZINE empty.
FC7	**P804**	**5 Turns on**	**Clockwise**	RECEIVING MAGAZINE full -STAND ALONE version. FILM jammed in TUNNEL - PROCESSOR INTERFACE version.
Fc6	**P802** **&P809**	3 Turns on **65 mA**	**Clockwise** **Clockwise**	MULTIPLE FILM detector bias. MULTIPLE **FILM** DETECTOR current control

PCB 108A
Assembly 30015924



See also page SM75

PCB 108A
Assembly 30015924



See also page SM74

Solenoid Valve Settings

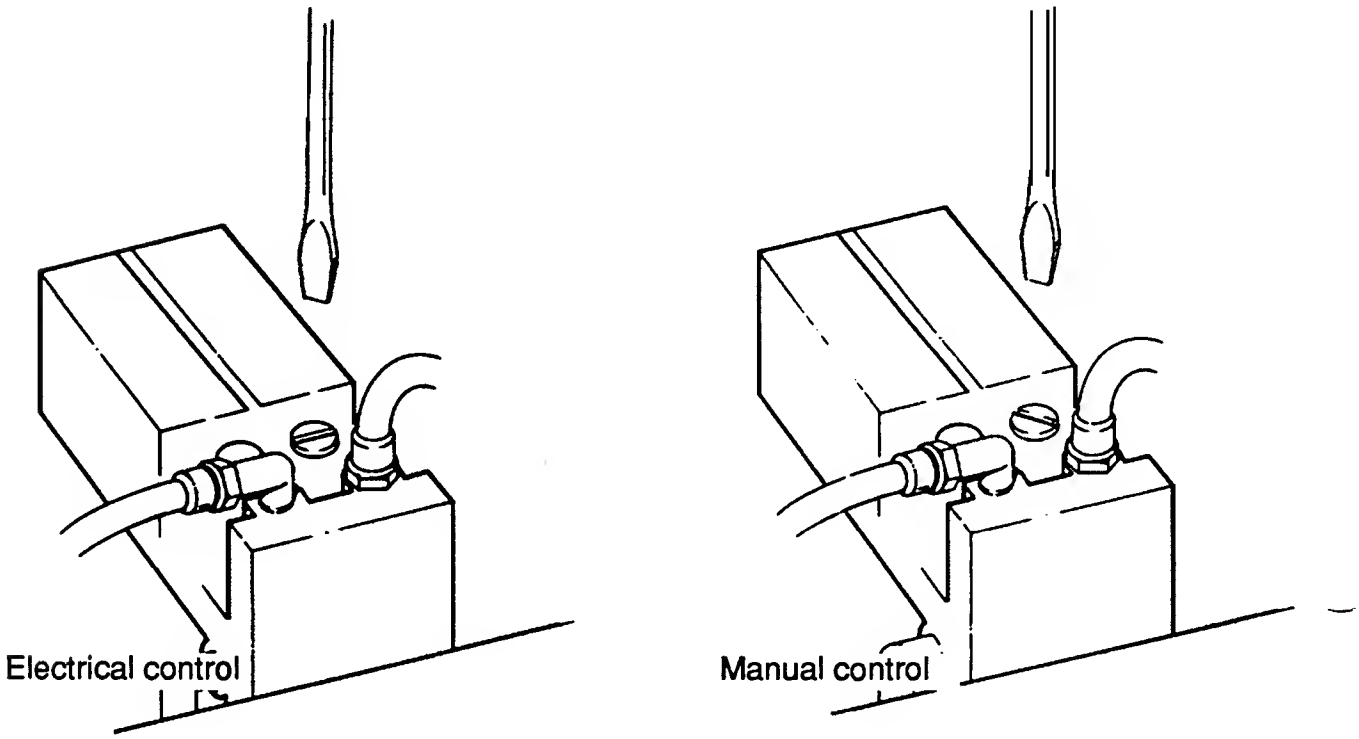


Figure1 6

AIR NOZZLES SYSTEM

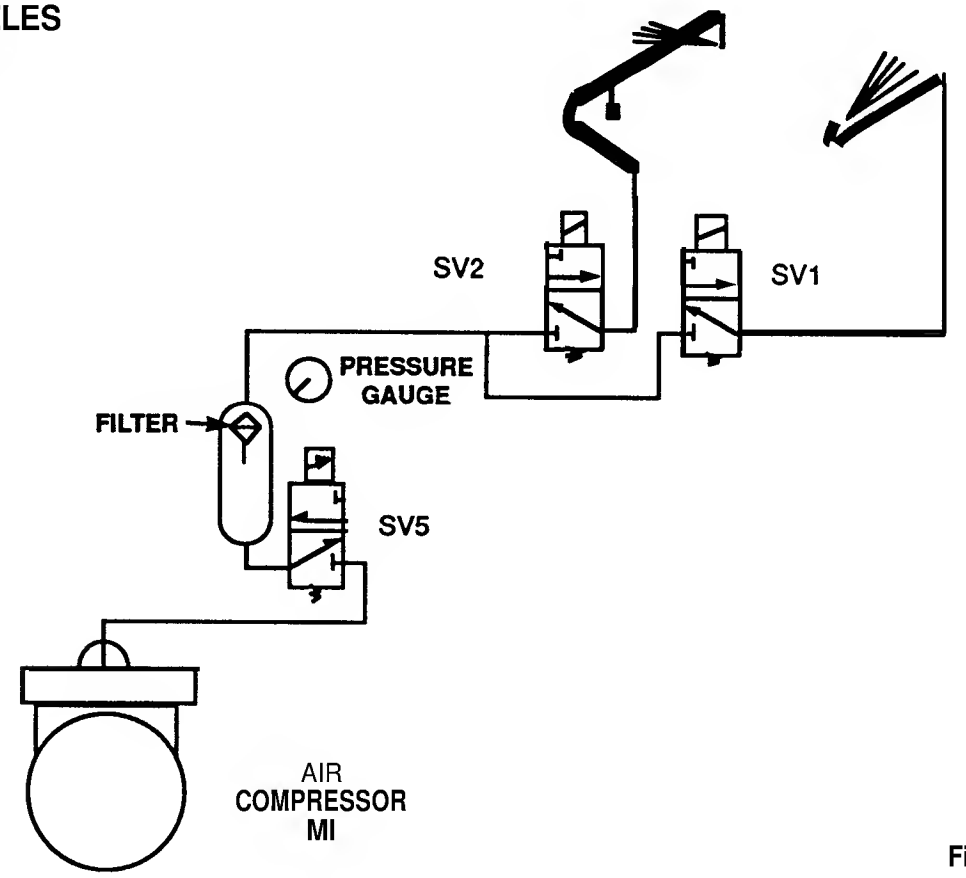


Figure1 7

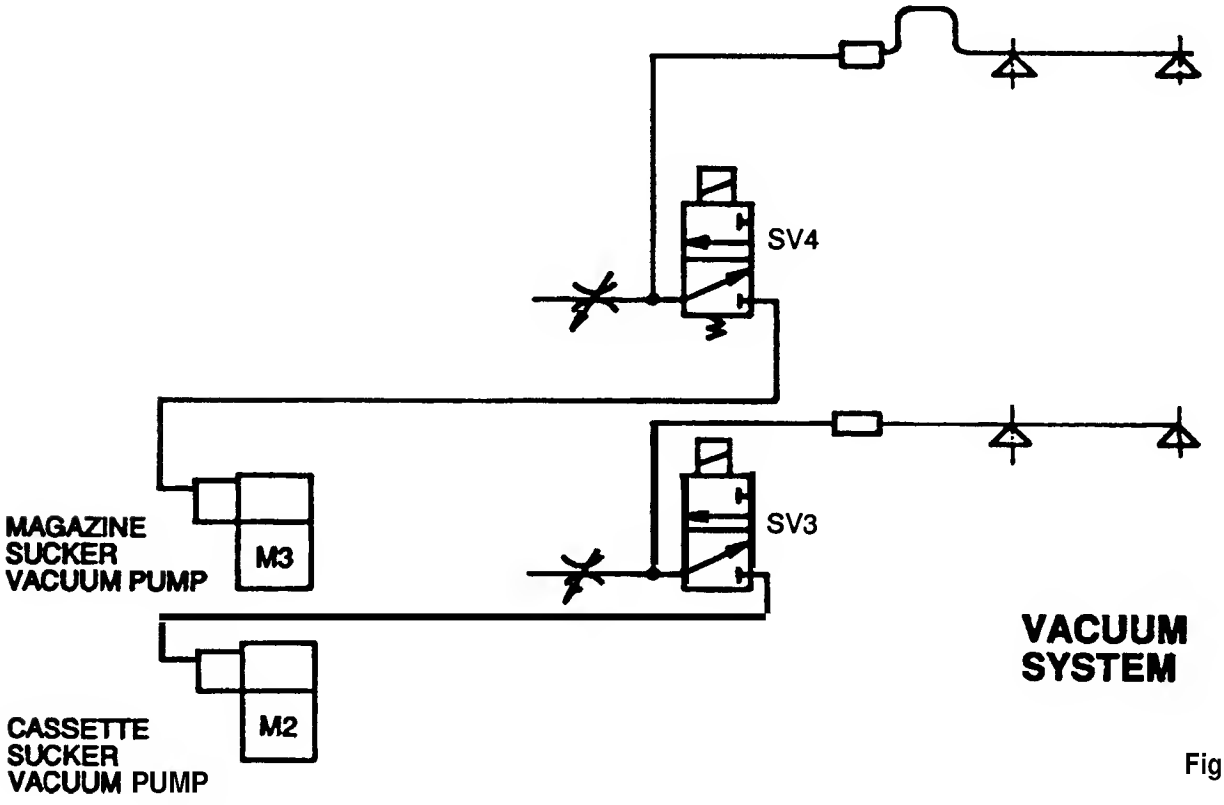
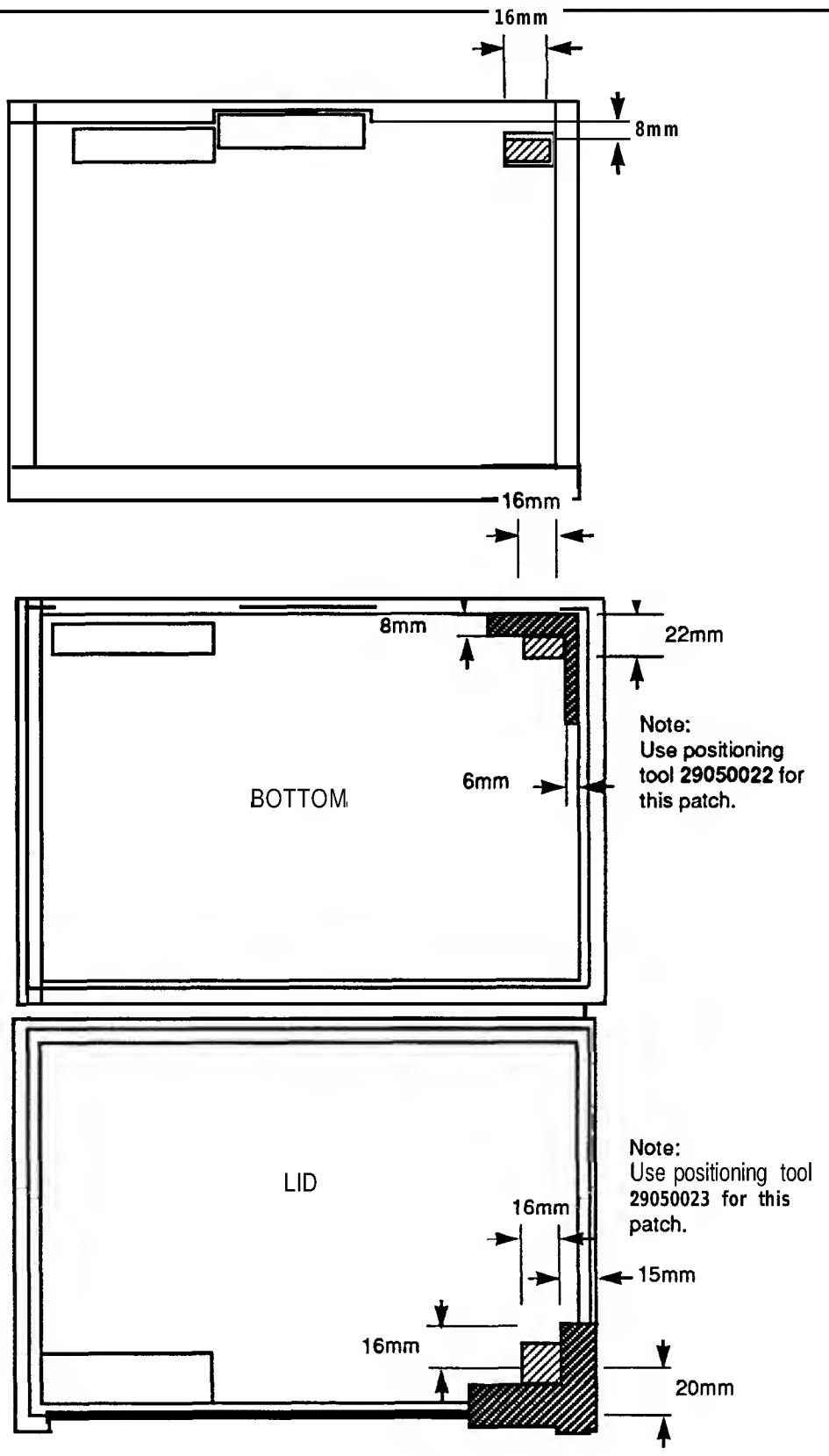
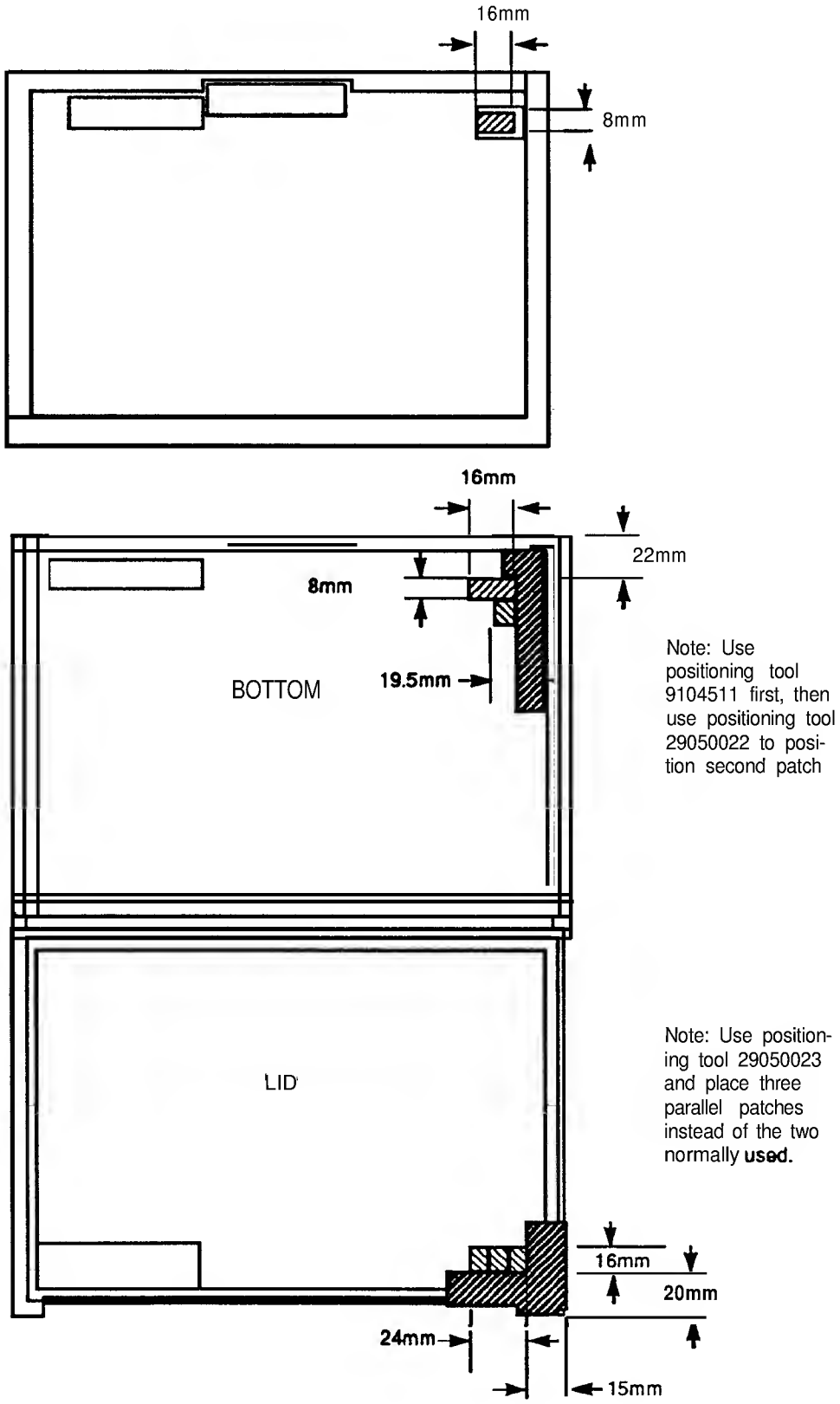


Figure 18



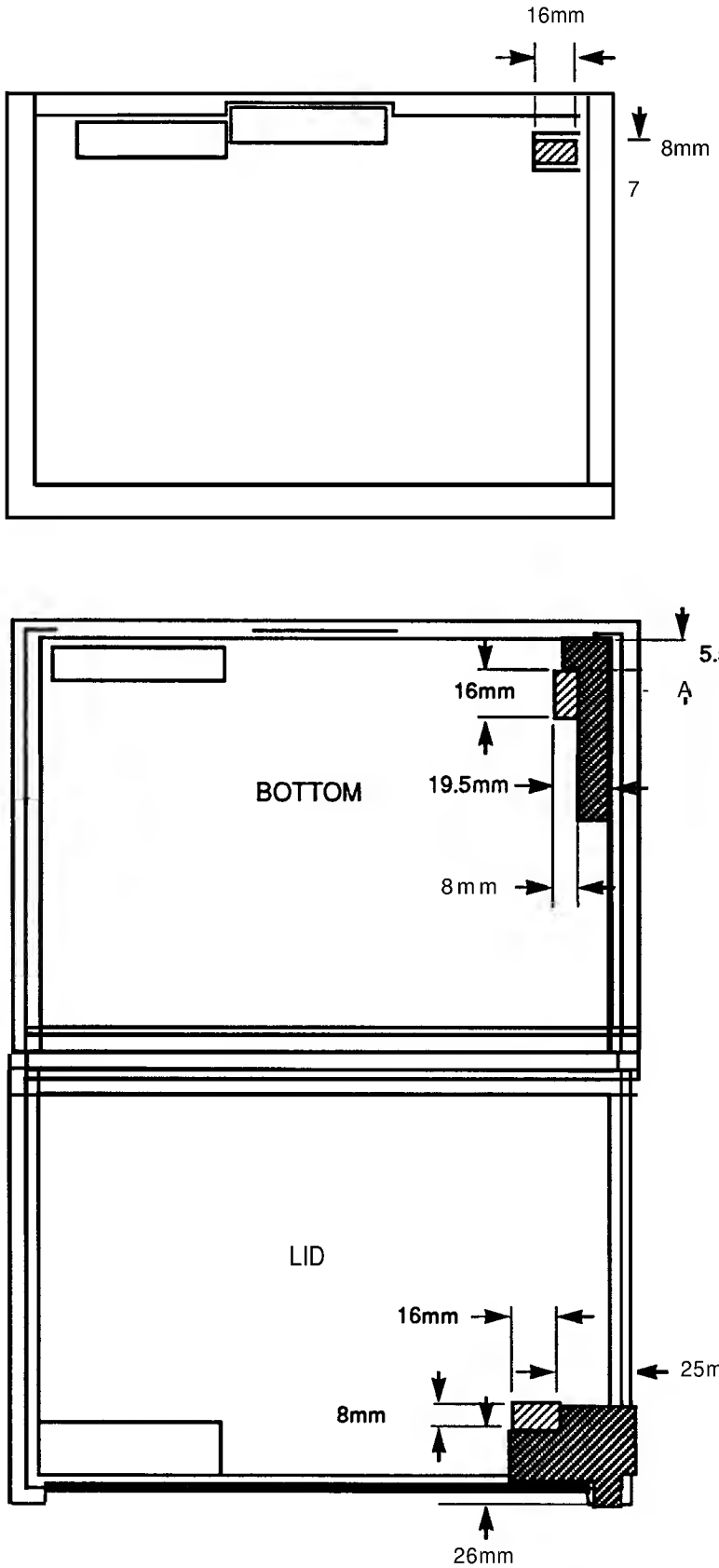
Reflector Positions in Cassettes Serial No. 1101 to 1161
Fig. 19



Universal patches

- when cassettes may be used in two Miniloaders - one Serial No. 1101 to 1161 and another 1162 up

Fig. 20



Note:
Use positioning tool 9194511 for this patch.

Note:
Use positioning too 9194531 for this patch.

Reflector Positions in cassettes Serial No. 1162 up
Fig. 23

Chart 1 Assume Power O.K. and Mains functioning

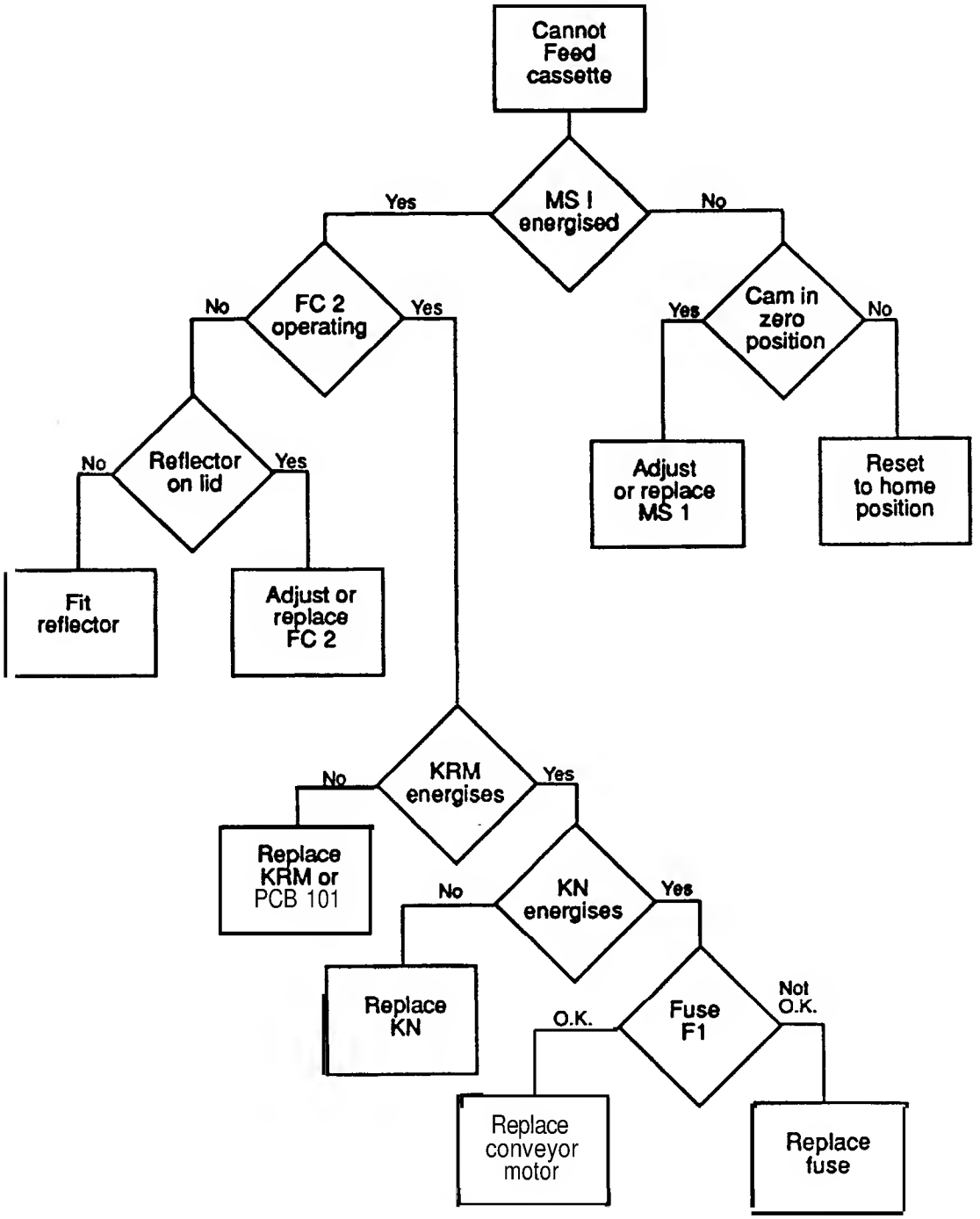


Chart 2 Cassette location

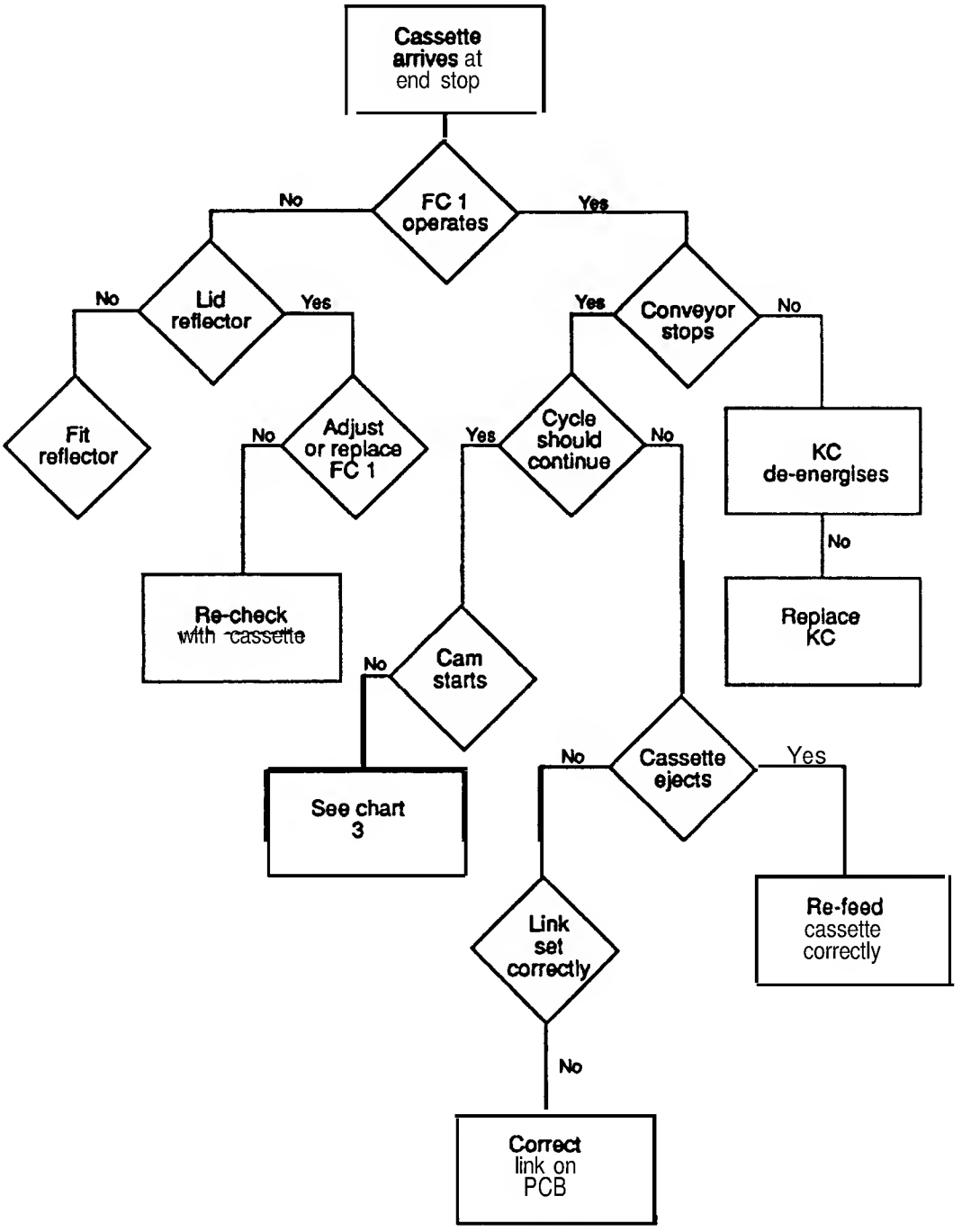


Chart 3 Cassette failed to open

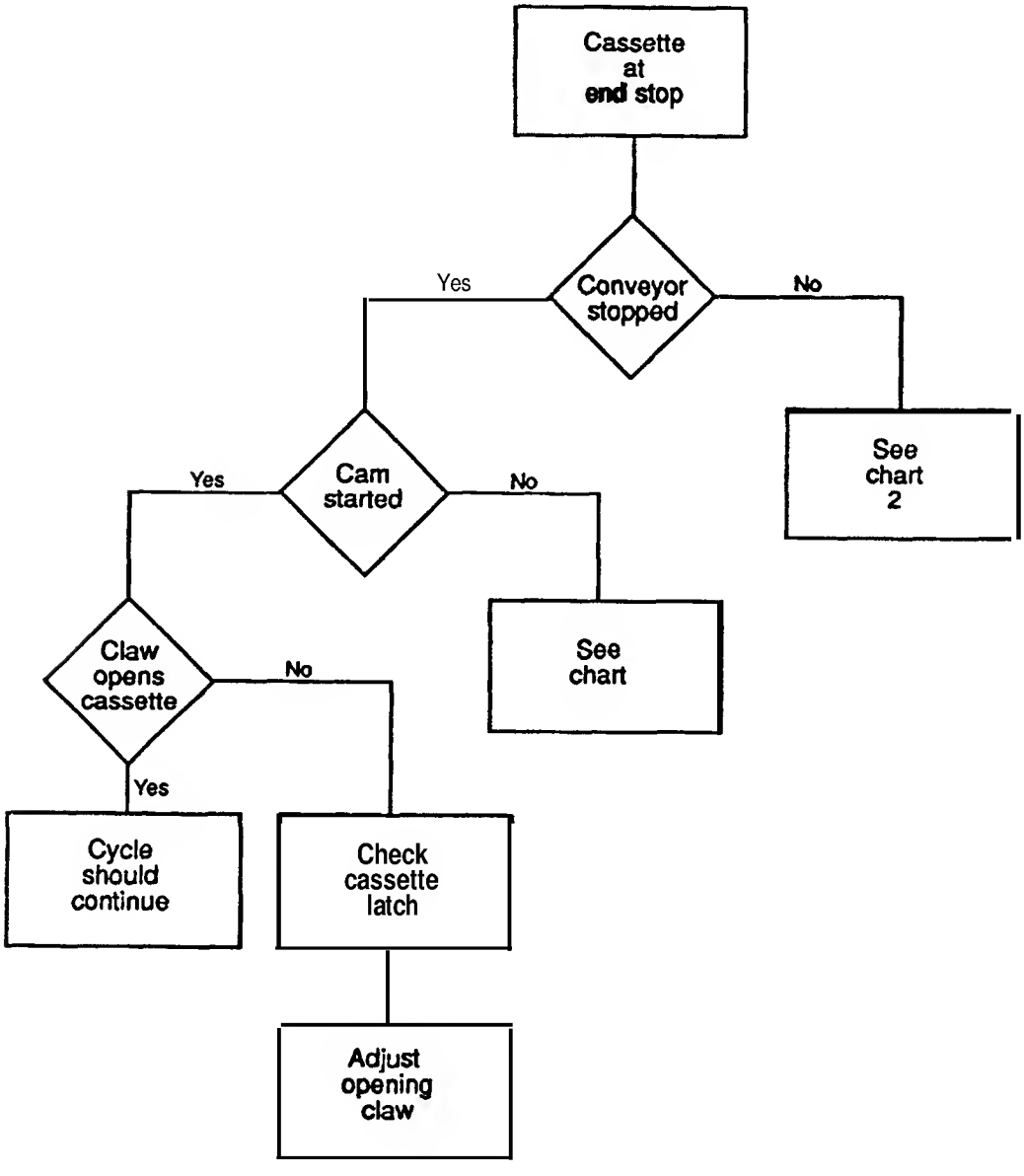


Chart 4 Failure to unload

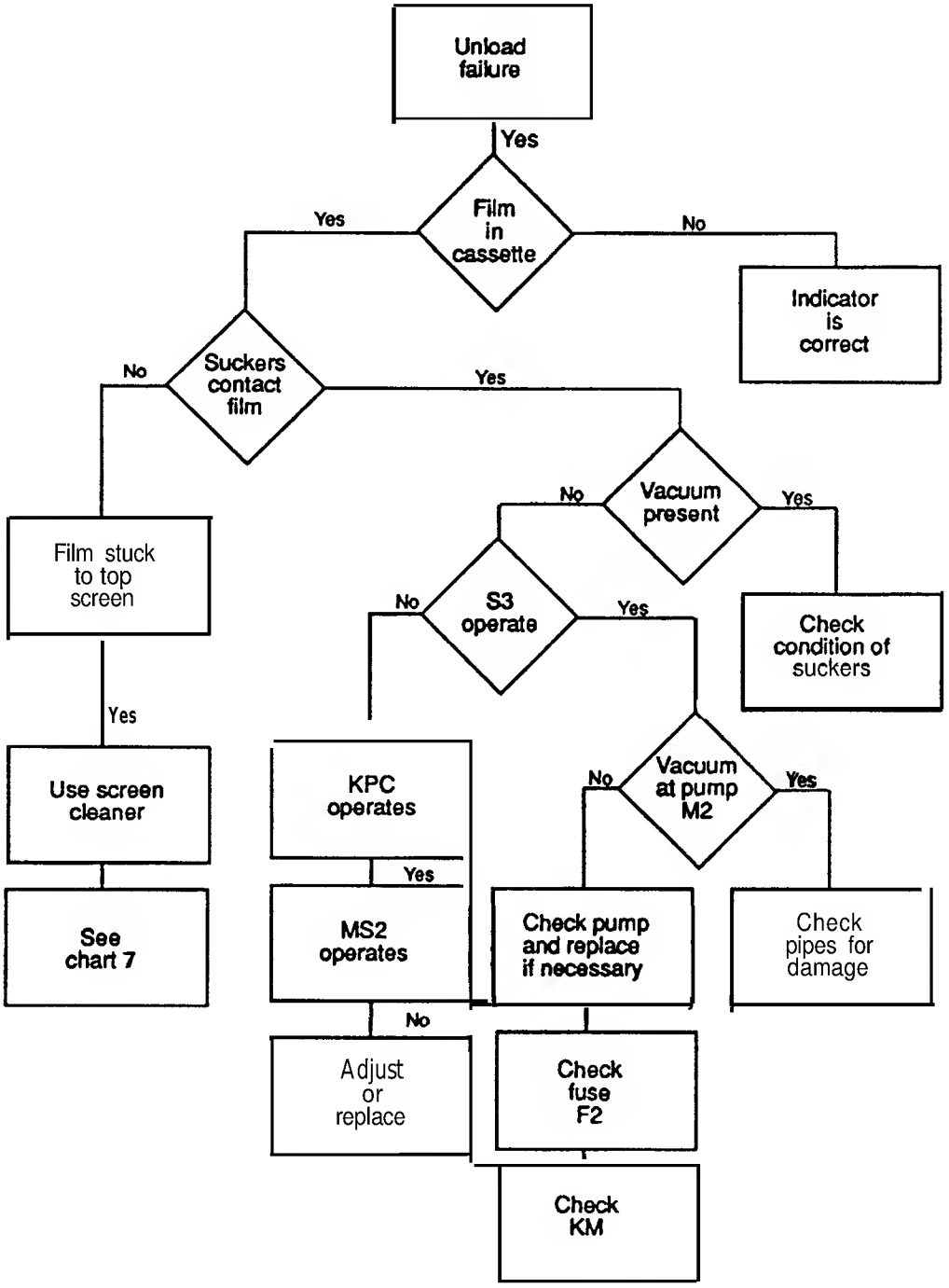


Chart 5 Failure to reload Cassette

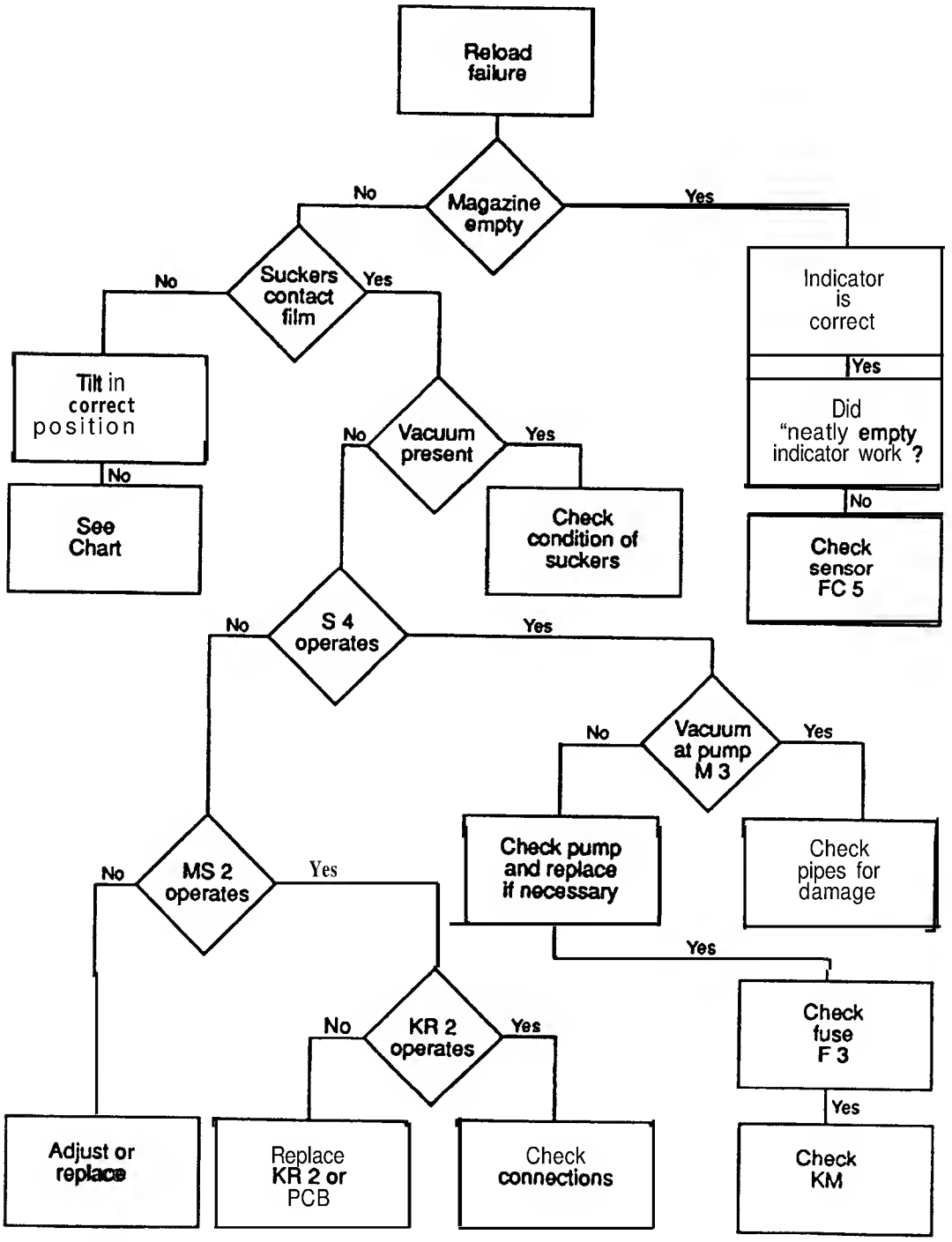
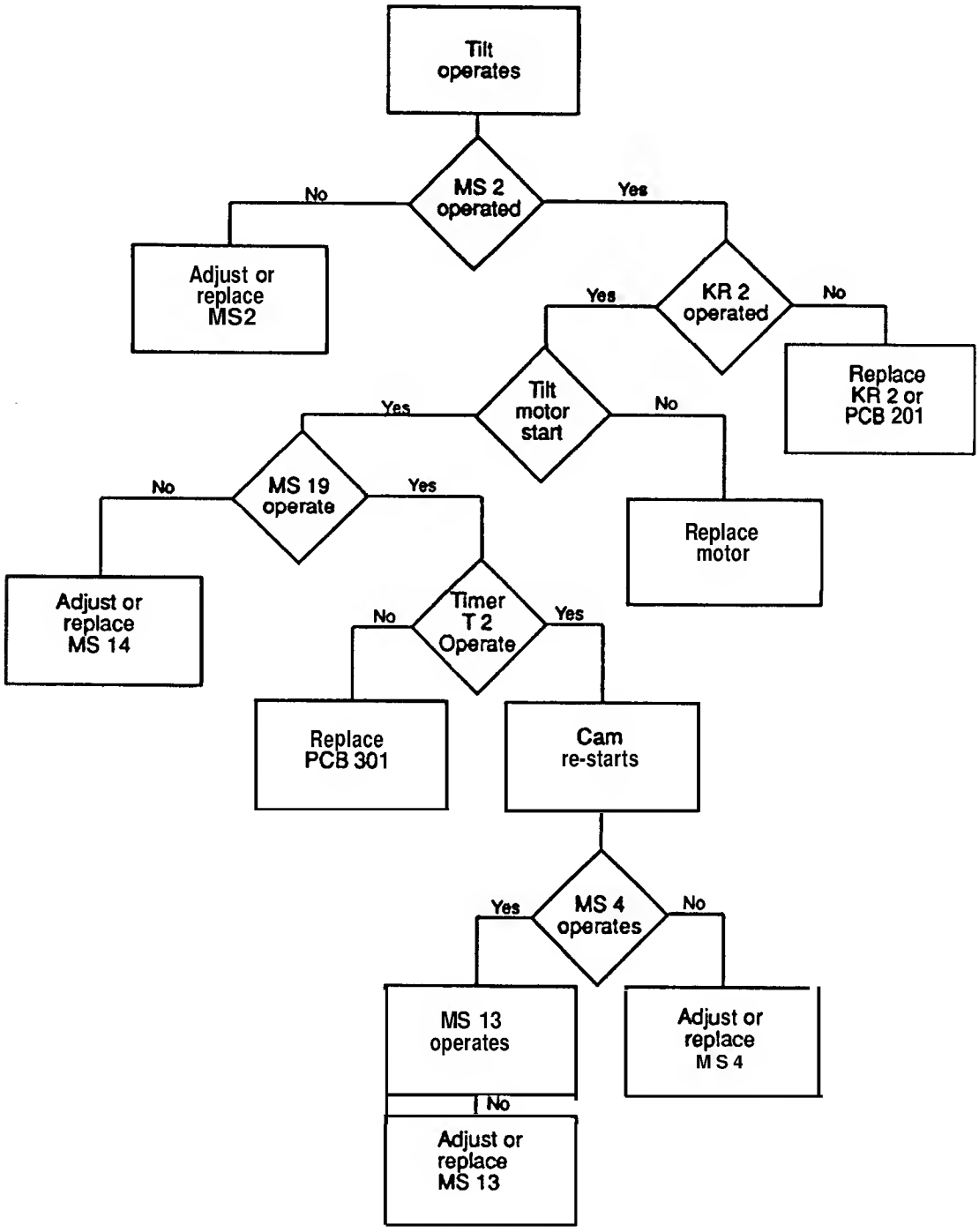
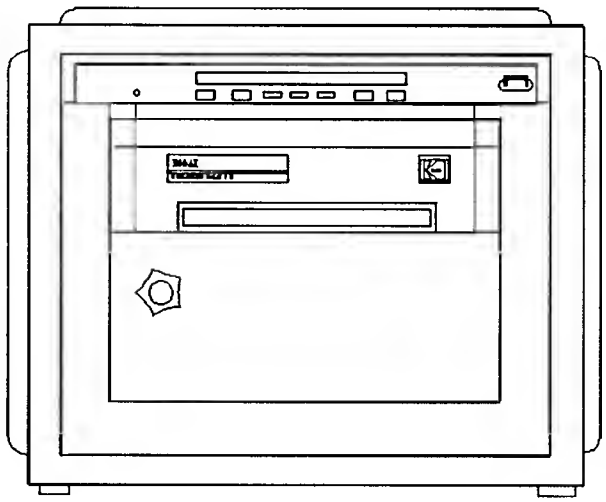


Chart 6 Failure of Tilt to operate correctly



MINILOADER MODEL 1M

SERVICE MANUAL SUPPLEMENT

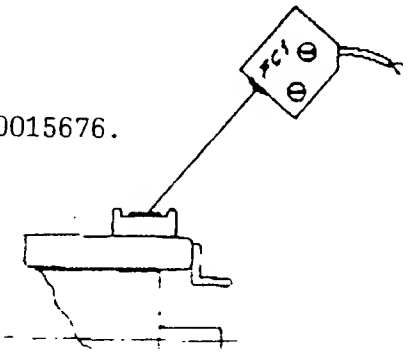


FEBRUARY 1992

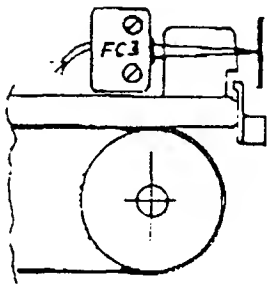
SERVICE CODES : -3234/3235

14.2 - FC2: Cassette entrance signal. Can be interrupted by an obstruction.

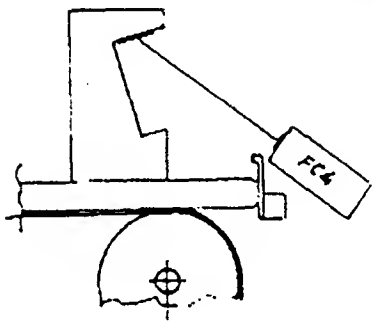
14.3 - FC1: Cassette end stop and film incassette.
Use gauge c.m.a. M223-30015675/M228-30015676.



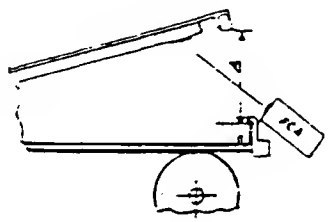
14.4 - FC3: Cassette opened signal.
Use gauge c.m.a.
M 223/30015675
M 228/30015676



14.5 - FC4: Film adherent to thre lid screen.
Check correct sensor function by
using gauge c.m.a. M 223/30015675
M 228/300 15676



14.6 - N.B. With adjustment (see point 14.5).
the cassette lid opens at A=32 42mm.
(minimum opening)



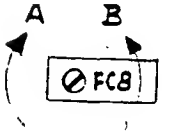
14.7 - FC5: Supply magazine nearly empty signal.
It may be actuated by using a mirror.

14.8 - FC6: Supply magazine empty.
It may be actuated by using a mirror.

(2)

14.9 - FC7: Film on chute, only processor interface version.
Can be interrupted by an obstruction.

14.10 - FC8: Multiple film.
It may be actuated with a double film.



ADJUSTMENT

- If it does not actuated with the sample of dark film *, turn towards A.
- If it is actuated with the sample of light film **, turn towards B.
- It is possible to increase the P4 pause time (double film reading) until 5/10 sec by PCB 301 dip switch pag.

* Dark sample 2.13 - 2.15 KΩ
** Light sample 1.00 - 1.07 KΩ

14.11 - FC9: Film jammed in chute.
This sensor is placed on the vertical interface, only in the processor interface version.
Check it by darkening with a film.

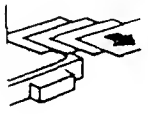
14.12 - FC10: Supply magazine open.
Check it by raising and lowering the magazine lid.

14.13 - FC11: Receiving magazine open, only in the stand alone version. Check it by raising and lowering the receiving magazine lid.

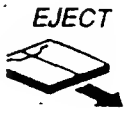
16.0 CHECK FUNCTIONS OF THE INDICATOR PANEL

16.1 

A) To set cassette XX.XX unloading mode, press 1 time
B) For load only, press 2 time
C) To check statistic film, press 3 times. Press reset for erasing (for Customer only).

16.2 

To set serial unloading rode. (Press reset for emercency casset t te).

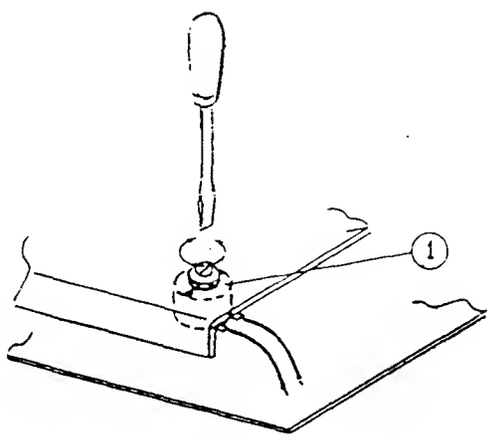
16.3 

To remove cassette from inside of the unit

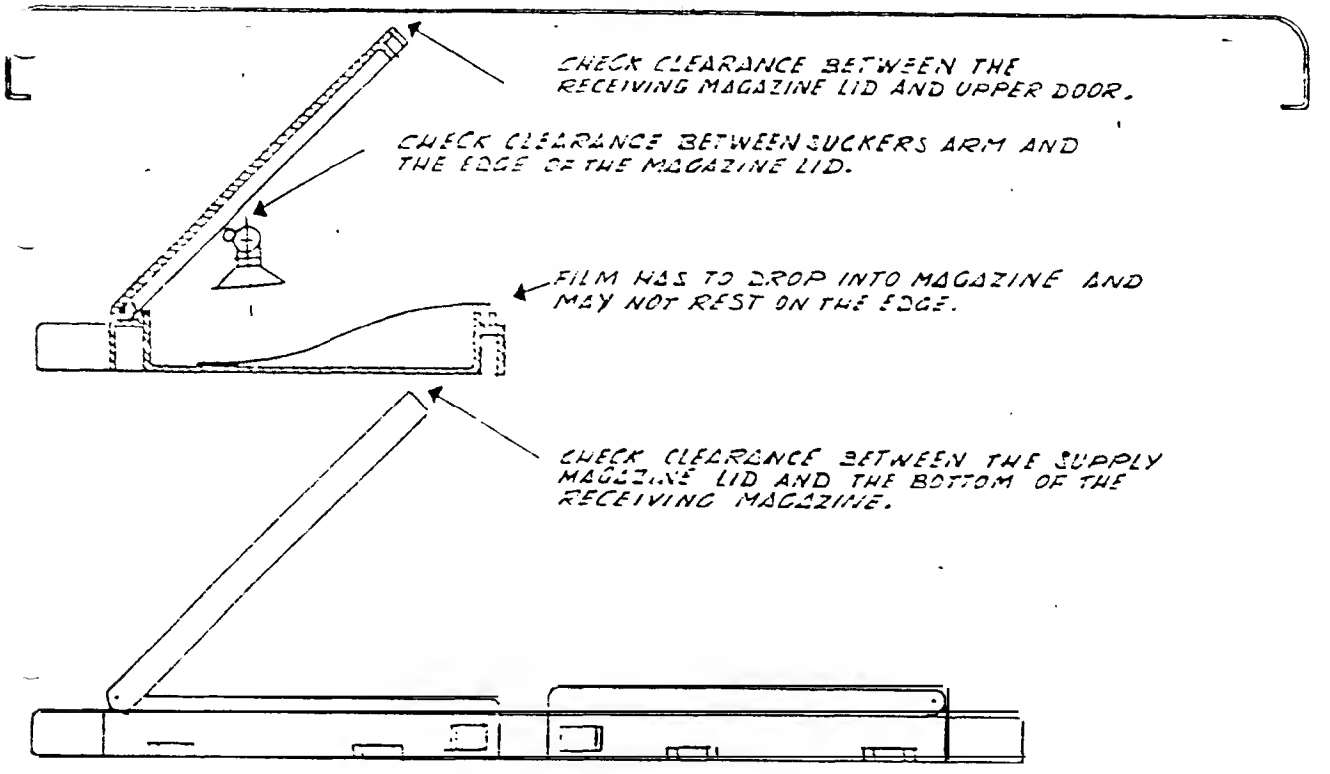
16.4 **RESET** Reset

23.0 SEPARATION FILM MOTOR

23.1 The speed of motor for film lifting and pick up can be adjusted with potentiometer 1



25.0 RECEIVING MAGAZINE (stand alone version only)

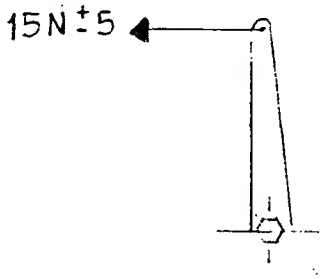


26.0 CAM SYSTEM

26.1 - Correct cam lubrification.

26.2 - Correct chain lubrification.

26.3 - Torque limiter adjustment; check with a tool M 224/30015677 and with a spring scale as shown:



ENCODER HOME POSITION ADJUSTMENT.

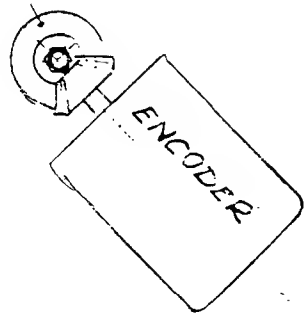
First check that at its lowest point, the CASSETTE OPENER MECHANISM is 50 mm +/- 1mm above the CASSETTE CONVEYOR BELT. [See SERVICE MANUAL pages SM11 & SM12].

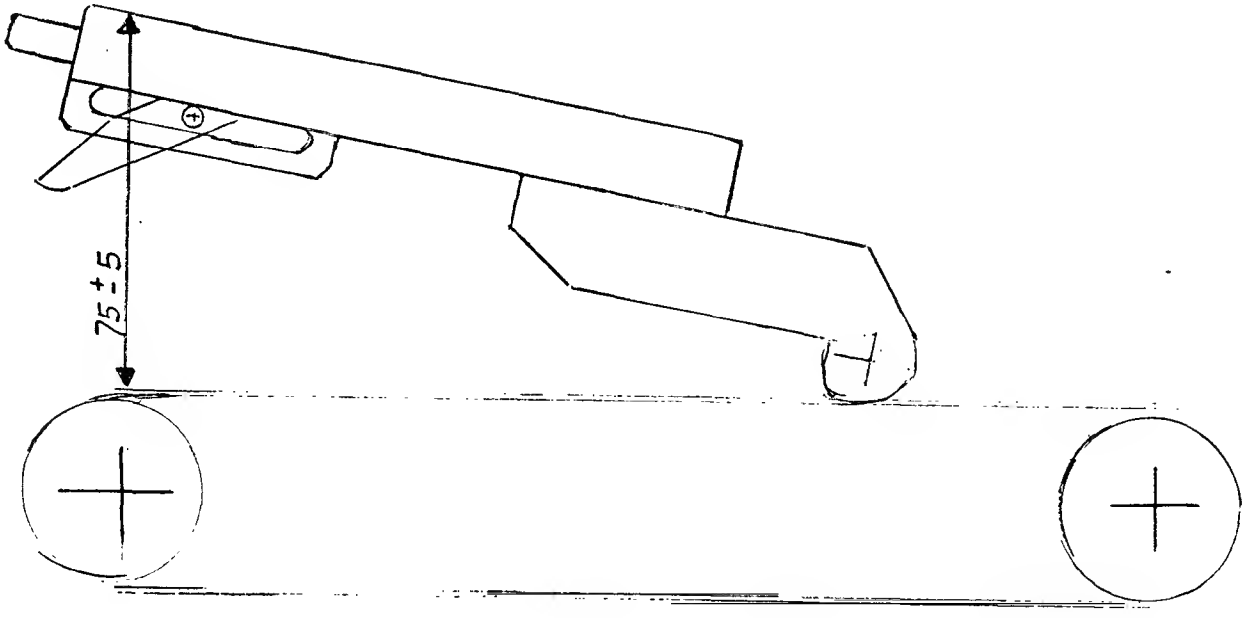
Then drive the CASSETTE OPENER MECHANISM using either the KEYPAD or the TOOL until it is 75 mm **+/- 5mm above the** CASSETTE CONVEYOR BELT, see below. CAUTION, MAKE SURE THE CASSETTE OPENER MECHANISM IS AT THE CORRECT PART OF THE CYCLE WITH THE TOOTH ASSEMBLY POSITIONED AS IN THE DRAWING BELOW.

(2)

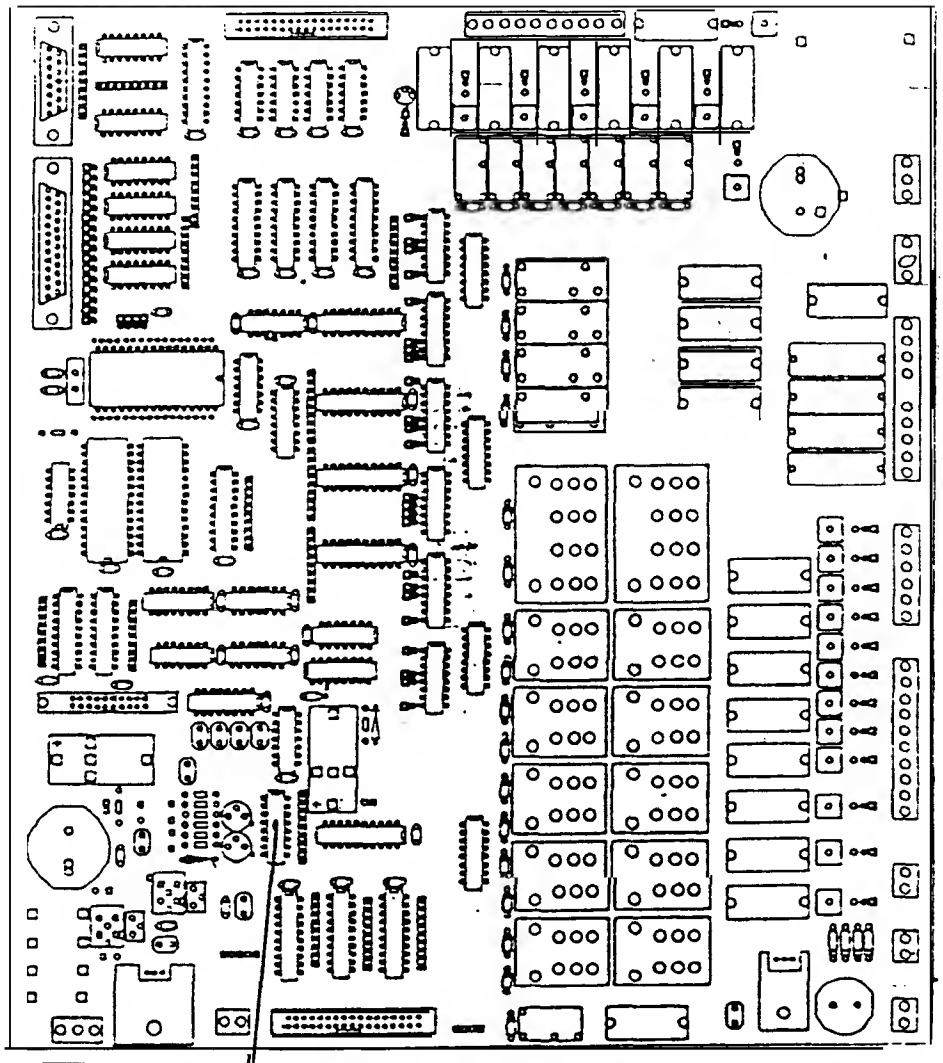
Loosen the NUT on GEAR 2 and rotate the GEAR until the HOME POSITION LED on PCB 303 lights. Tighten the GEAR.

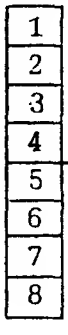
Run a cycle and check that the CASSETTE OPENER MECHANISM reaches the 75 **mm +/-** 5 mm position. If necessary repeat -the adjustment.





CPU BOARD PCB 3 0 1 DIPSWITCH





1 OFF: STANDARD MODE - ON: CONTINUOUS CYCLES

8 OFF: PROCESSOR-ON: STAND

INTERACE VERSION

ALONE VERSION

Publication No. 29054552
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INSTRUCTIONS FOR FITTING THE NEW SWF CAM MOTOR TO THE Kodak MINILOADER 1, 1M, 2 and 2 PLUS

The new style SWF MOTOR replaces the original CAM MOTOR, is more reliable and draws a smaller current.

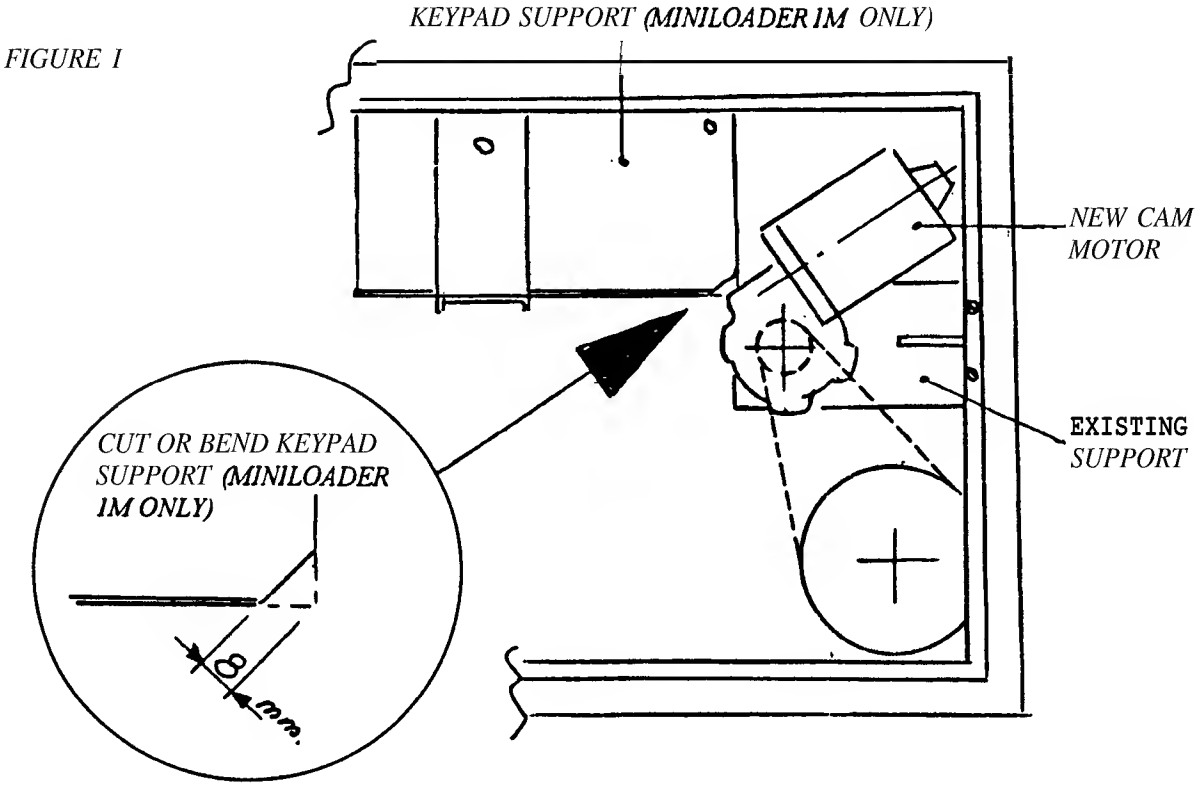
KIT NUMBER 30014390

Contents	1	30025250	MOTOR ASSEMBLY COMPLETE
	1	30026359	CAM MOTOR SUPPORT (FOR MINILOADER 2 AND 2 PLUS)
	1	30014391	LARGE MOTOR SPROCKET ASSEMBLY (FOR MINILOADERS THAT HAVE BEEN SPEEDED UP)
	2	30015697	FASTON CONNECTORS (6.3mm)
	1	29054552	FITTING INSTRUCTIONS

FITTING THE MOTOR TO MINILOADER 1 AND 1M.

The new MOTOR is a direct replacement. The only difference is the orientation of the MOTOR See FIGURE 1. Use the SPROCKET assembly that is the same size as the one fitted to the original CAM MOTOR. Discard the CAPACITORS soldered to the original MOTOR (if fitted), the new MOTOR has internal suppression. Fit the two FASTON connectors to the MOTOR LEADS, and check the MOTOR is rotating in the correct direction. The MOTOR CLUTCH will need to be set to the correct torque as detailed in the SERVICE MANUAL. If the MINILOADER is processor interfaced, check the FEED DELAY is set correctly (there will be a slight cycle time difference with the new MOTOR).

FIGURE 1



FITTING THE MOTOR TO MINILOADER 2 and 2 PLUS.

The new MOTOR requires a new SUPPORT BRACKET. Remove the existing MOTOR and SUPPORT BRACKET, and using the original mounting SCREWS fit the new MOTOR and SUPPORT BRACKET. See FIGURE 2. Use the SPROCKET assembly that is the same size as the one fitted to the original CAM MOTOR. Discard the CAPACITORS soldered to the original MOTOR, the new MOTOR has internal suppression. Fit the two FASTON connectors to the MOTOR LEADS, ad check the MOTOR is rotating in the correct direction. The MOTOR CLUTCH will need to be set to the correct torque as detailed in the SERVICE MANUAL. If the MINILOADER is processor interfaced, check the PARAMETER "GAP BETWEEN FILMS" is set correctly (there will be a slight cycle time difference with the new MOTOR). Refit the MOTOR EARTH LEAD as shown in the FIGURE.

FIGURE 2